California Regional Water Quality Control Board
Central Valley Region
Robert Schneider, Chair

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

Sacramento Main Office
Internet Address: http://www.swrcb.ca.gov/rwqcb5
3443 Routier Road, Suite A, Sacramento, California 95827-3003
Phone (916) 255-3000 • FAX (916) 255-3015

8 April 2003 **CERTIFIED MAIL**

Peter C. Dougherty
Meridian Beartrack Company
9670 Gateway Drive, Suite 200
Reno, NV 89511-8997

AGENDA PACKAGE FOR CONSIDERATION OF ADOPTION OF A CEASE AND DESIST ORDER, ROYAL MOUNTAIN KING MINE, CALAVERAS COUNTY

Enclosed for your information is the agenda package, as it will be presented to the Regional Board for consideration at the **Friday, 25 April 2003** meeting in Sacramento. The agenda package includes the Notice of Public Hearing, a summary agenda, a staff report, and the proposed Cease and Desist Order. The meeting will begin at 8:30 a.m.; however, a specific time has not been established for this item. The agenda package may also be viewed at the Regional Board's web site at the Waste Discharges to Land section on Available Documents page:
http://www.swrcb.ca.gov/rwqcb5/available_documents/index.html#anchor618298

During the hearing, no more than 30 minutes of testimony will be received from each of the designated parties (Regional Board staff and Meridian Beartrack Company), while no more than three minutes of testimony will be allowed for any other interested party. Any comments must be submitted in writing and will be accepted until **14 April 2003**.

If you have any questions, please contact me at (916) 255-3135.

VICTOR J. IZZO
Senior Engineering Geologist

Enclosure (agenda package)

cc: Interested Party List (see attached)

cc+ encl: Lori T. Okun, Office of Chief Counsel, SWRCB, Sacramento
Daniel Frink, Office of Chief Counsel, SWRCB, Sacramento
Joseph Mello, Clean Water Programs, SWRCB
Kim Hansen, Planning Director, Calaveras County Planning Dept., San Andreas
Brian Moss, Director, Calaveras County Department of Environmental Health
California Department of Fish and Game- Region II-Rancho Cordova
Darlene Ruiz, Hunter/Ruiz, Sacramento
James Good, Gresham, Savage, Nolan & Tilden, San Bernardino
Jon K. Wactor, Wactor & Wick LLP, Oakland
Renee Guzman-Simon, Weston Benshoof et al. LLP, Los Angeles

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
3443 Routier Road, Suite A, Sacramento, California 95827

PUBLIC HEARING

Concerning

CONSIDERATION OF EXISTING WASTE DISCHARGE REQUIREMENTS
AND
CEASE AND DESIST ORDER
FOR

MERIDIAN BEARTRACK COMPANY
MERIDIAN GOLD COMPANY
AND FELIX MINING COMPANY
ROYAL MOUNTAIN KING MINE FACILITY
CALAVERAS COUNTY

The Royal Mountain King Mine is near the town of Copperopolis in Calaveras County. Meridian Beartrack Company, Meridian Gold Company, and Felix Mining Company (collectively, "Discharger") own and operate the Royal Mountain King Mine facility from which gold ore was actively mined between 1989 and 1994. Waste management units include the Flotation Tailings Reservoir (FTR), Process Water Pond, Leachate Collection and Residue Facility, Western Overburden Disposal Site (ODS), FTR ODS, Gold Knoll ODS and Skyrocket Pit. Monitoring data show that leachate discharging from waste management units is impacting surface water and groundwater. The Skyrocket Pit lake wastewater impacts surface water as seepage to Littlejohns Creek and threatens to overflow the dam spillway. All discharges to surface water flow to Flowers Reservoir, which ultimately flows into the San Joaquin River. The Discharger contends that observed water quality at the site's monitoring points represent background water quality, and are not changes caused by discharges of mining wastes from the WMUs.

The Regional Board adopted Waste Discharge Requirements (WDRs) and issued Cease and Desist Order (CDO) No. 5-01-041 in March 2001. The original CDO requires the Discharger to: 1) cease discharges to surface water, groundwater and Skyrocket Pit, 2) close the ODSs, FTR and Skyrocket Pit pursuant to Title 27, California Code of Regulations, Division 2, Subdivision 1 (land disposal regulations), and 3) update financial assurances. The Discharger petitioned the CDO to the State Water Resources Control Board (State Board). The State Board issued a draft order in May 2002. The Regional Board will consider the issues raised in the State Board's draft order and consider whether to rescind the original CDO and issue a CDO that will include an updated timeline for the Discharger to comply with WDRs.

Furthermore, the Discharger has requested WDRs be revised in order to reclassify the ODSs and FTR liquid from Group B mining waste to Group C. Additionally, the Discharger has requested that WDRs be revised to clarify that shutting the FTR Leachate Concentrate Recovery System (LCRS) is an acceptable closure option of the FTR. Board staff believes that these actions would not meet the requirements of Title 27.

A **formal** public hearing concerning this matter will be held during the Regional Board meeting, which is scheduled for:

DATE:	24 and 25 April 2003
TIME:	8:30 am
PLACE:	Central Valley Regional Water Quality Control Board 3443 Routier Road, Suite A Sacramento, California 95827

The designated parties for this hearing are as follows:

- Staff of Central Valley Regional Board
- Meridian Beartrack Company, Meridian Gold Company, and Felix Mining Company

Only designated parties will have these rights: to call and examine witnesses; to introduce exhibits; to cross-examine opposing witnesses; to impeach any witness; and to rebut the evidence against him or her. All other persons wishing to testify or provide comments are interested persons and not designated parties. Such interested persons may request status as a designated party for purposes of this hearing by submitting such request in writing to the Board no later than **14 April 2003**. The request must explain the basis for status as a designated party and in particular how the person is directly affected by the discharge.

Persons wishing to comment on this noticed hearing item must submit testimony, evidence, and/or comments in writing to the Regional Board no later than **14 April 2003.** Written testimony, evidence, or comments submitted after **14 April 2003** will not be accepted and will not be incorporated into the administrative record if doing so would prejudice any party.
All interested persons may speak at the Board meeting, and are expected to orally summarize their written submittals. Oral testimony will be limited in time by the Board Chair.

Anyone having questions concerning this matter should contact Kim Schwab at 916-255-3137. The proposed item and related documents may be inspected and copied at the Regional Board's office at 3443 Routier Road, Suite A, Sacramento, California, weekdays between 8:00 a.m. and 5:00 p.m. by appointment.

The procedures governing Regional Water Board meetings may be found at Title 23, California Code of Regulations, Section 647 et seq. and are available upon request. Hearings before the Regional Water Board are not conducted pursuant to Government Code section 11500 et seq. The procedures may be obtained by accessing http://www.swrcb.ca.gov/water_laws/index.html. Information on meeting and hearing procedures is also available on the Regional Board's website at http://www.swrcb.ca.gov/rwqcb5/board_meetings/mtgprocd.html or by contacting any one of the Board's offices. Questions regarding such procedures should be directed to Ms. Janice Tanaka at (916) 255-3039

The hearing facilities will be accessible to persons with disabilities. Individuals requiring special accommodations are requested to contact Ms. Janice Tanaka at (916) 255-3039 at least 5 working days prior to the meeting. TTY users may contact the California Relay Service at 1-800-735-2929 or voice line at 1-800-735-2922.

Please bring the above information to the attention of anyone you know who would be interested in this matter.

_____

JACK DEL CONTE, Acting Assistant Executive Officer

5 March 2003

ITEM:

SUBJECT: Meridian Beartrack Company, Meridian Gold Company, and Felix Mining Company (Discharger), Royal Mountain King Mine, Calaveras County

BOARD ACTION Consideration of Rescission of Cease and Desist Order No. 5-01-041 and Adoption of a Revised Cease and Desist Order; Consideration of Existing Waste Discharge Requirements

BACKGROUND The Royal Mountain King (RMK) Mine is west of Highway 4 and south of Rock Creek Road near the town of Copperopolis, Calaveras County. The Discharger mined gold ore from three open pits (Gold Knoll, Skyrocket, and North Pits) between 1989 and 1994, at which time mining ceased. Open pit mining, in general, generates three types of waste streams: processed ore rock that is discharged as a slurry; leachate associated with the discharged slurry; and waste rock called overburden, which is either low grade ore or associated waste rock removed during pit excavation. This facility also had a heap leach operation where cyanide-laden liquid was dripped over low-grade ore, creating another waste stream.

Seven waste management units (WMUs) were created to handle the waste streams:

- three overburden disposal sites (ODSs) containing Group B (designated) mining waste;
- the Process Water Pond (PWP), a Group A (hazardous) mining WMU;
- the Leached Concentrate Residue Facility (LCRF), a Group B (designated) mining WMU;
- the Flotation Tailings Reservoir (FTR), Group C solids (non-designated) and Group B liquid (designated) mining WMU; and
- Skyrocket Pit, a Group C (non-designated) mining WMU.

Most of these WMUs have degraded groundwater and surface water in violation of WDRs. The three ODSs contain approximately 50 million tons of waste rock. Wastewater from the ODS piles is causing statistically significant increases in concentrations of waste constituents in the ground and surface water as seeps at the base of the waste rock piles. Water now flows year round in once ephemeral (intermittent) streams (i.e., 100% wastewater in summer) because of the seeps.

RMK Mine mining activities created the Skyrocket Pit and North Pit lakes. These pit lakes have been filled with a combination of groundwater by natural recharge and direct discharge of untreated wastewater. Monitoring data indicate that the concentrations of waste constituents in Skyrocket Pit exceed water quality objectives and baseline water quality (pre-RMK Mine activities). Furthermore, the lake level in Skyrocket Pit has risen higher than historic groundwater levels (due to construction of the dam) to a level that has created a groundwater mound. Subsequently this has caused seepage from the Pit resulting in an uncontrolled discharge to Littlejohns Creek in violation of WDRs.

This discharge exceeds the water quality objectives in Littlejohns Creek and threatens beneficial uses in downstream waters in Flowers Reservoir immediately downgradient from the property boundary. Skyrocket Pit also continues to fill and is approaching the spillway of the dam. The dam has been increased in height twice to prevent overflow to Littlejohns Creek and will likely overflow in the next few years unless further abated.

Littlejohns Creek and Flowers Reservoir are groundwater recharge water bodies that contribute to domestic water supply for property owners of the Diamond XX Estates, located immediately adjacent and downstream of the mine's discharges.

On 15 March 2001, the Regional Board adopted Cease and Desist Order (CDO) No. 5-01-041 against the Discharger for discharging contrary to Closure Waste Discharge Requirements Order No. 5-01-040. The Discharger petitioned the CDO to the SWRCB. The SWRCB issued a draft order in May 2002. The draft order would have remanded the CDO to the Regional Board for further consideration of the impacts on background conditions at the site. The SWRCB deferred taking final action on the petition to allow Regional Board staff and the Discharger to resolve the disputed issues, which we have been unable to accomplish. In order to conserve the resources of the Discharger and the State and Regional Boards, staff recommends that the Regional Board address the SWRCB's concerns as expressed in the draft order, rather than waiting for a formal remand.

ISSUES

There are four major issues remaining at this facility:

- Impacts to groundwater and surface water;
- Closure of Waste Management Units (WMUs) in compliance with WDRs and Title 27;
- Consideration of revision of WDRs; and
- NPDES issues.

These issues are major obstacles preventing closure of this facility. More details are provided in the following discussion:

- **Significant Impacts to Water Quality**

The data show RMK has significantly impacted groundwater and surface water throughout this facility. This determination is based on groundwater and surface water changes that have occurred since RMK began mining the property. Natural background is difficult to assess because of the lack of data before the time all (historic) mining occurred at this facility. Therefore, Board staff used the initial several years of RMK data, which predate most of their mining. The changes in water quality show increases in sulfate as well as other constituents that distinctly identify the pollution caused by RMK mining. Based on the data, RMK has degraded and continues to degrade waters of the State.

More specifically, sulfate in Littlejohns Creek (SWM-10) has increased from an average of 67 mg/L to an average of 450 mg/L when seepage

began (1999) from Skyrocket Pit. Arsenic levels in Skyrocket Pit range from 16 to 670 µg/L. The median level of 122 µg/L shows that most of the values are 10 times greater than the U.S. EPA Primary Maximum Contaminant Level (MCL) for drinking water of 10 µg/L. On 30 October 2002, arsenic was 108 µg/L in Skyrocket Pit lake. A significant concern is the fact that Skyrocket Pit is leaking to Littlejohns Creek, which flows to Flowers Reservoir and the Delta. Arsenic in Flowers Reservoir now exceeds the U.S. EPA MCL for drinking water in the summer months. Sulfate levels in Littlejohns Creek have increased from 100 mg/L to 850 mg/L. Increases in TDS and sulfate are observed in groundwater point of compliance wells associated with the FTR, FTR ODS, Western ODS, and Gold Knoll ODS.

The Discharger contends that "observed water quality changes" are not significant and are naturally occurring, and therefore the impacts to water quality are not significant.

- **Closure of Waste Management Units**

FTR Closure: The FTR is currently closed as a Group C WMU because of the classification of the solids. The WMU was regraded to divert stormwater runoff, covered with topsoil and vegetated. Group B wastewater collected in the FTR Leachate Collection and Recovery System (LCRS) was transferred to Skyrocket Pit for many years in violation of WDRs. Recently the LCRS was plugged which is also a violation of WDRs. The proposed CDO requires development of a closure plan that complies with WDRs and Title 27.

Skyrocket Pit Closure: The excavated Skyrocket Pit has filled with a combination of naturally occurring groundwater, wastewater transferred from the FTR (violation of WDRs), and wastewater from the Gold Knoll ODS (violation of WDRs). The lake level in Skyrocket Pit has increased the potential for wastewater to overflow to surface water at the spillway of the dam. The dam has been increased in height twice to accommodate the high water level of the lake above the original water table. In addition, seepage to Littlejohns Creek is occurring in violation of WDRs due to the groundwater mound created by the lake level. The proposed CDO requires development of a management or closure plan that ensures compliance with WDRs and Title 27.

ODS Closure: The ODSs are classified as Group B mining waste based on high levels of dissolved solids in wastewater, which continue to degrade ground and surface water. Title 27 requires Group B WMUs (1) be closed with an impermeable cap (i.e., clay or engineered alternative) to prevent precipitation from infiltrating mining waste materials; and (2) have updated financial assurances for closure construction and postclosure maintenance activities. Engineered alternatives to capping are permissible, but only if the discharger demonstrates that the alternatives meet the performance goals of a cover as prescribed by Title 27. In addition, the Discharger has failed to submit adequate financial assurance documents in compliance with Title 27.

The Discharger contends that for the ODSs, the waste classification of "B" is inappropriate, and if the appropriate classification of "C" were used, closure would be completed and in compliance with Title 27 closure requirements (see also Revision of WDRs, below).

- **Revision of WDRs**

The Discharger has requested WDRs be revised in order to reclassify the ODSs and FTR liquid from Group B to Group C. Additionally, the Discharger has requested that WDRs be revised to clarify that shutting the FTR Leachate Concentrate Recovery System (LCRS) is an acceptable closure option of the FTR. Board staff believes that these actions would not meet the requirements of Title 27.

- **NPDES**

The WDRs prohibit discharges to surface water. Therefore, the Discharger must either cease discharges to surface water or obtain an NPDES permit. The Discharger submitted an incomplete Report of Waste Discharge for an NPDES permit under the Federal Clean Water Act for discharges to surface water from mining waste management units.

The Discharger now claims discharges from the site (existing seeps and threatened overflows from Skyrocket Pit) represent natural background conditions and therefore, an NPDES permit is not necessary now or in the future.

Cease and Desist (C&D) Order

Section 13301 of the Water Code authorizes the Regional Board to issue a CDO where discharges are violating waste discharge requirements. The proposed revised CDO includes additional findings to address the concerns raised in the State Board's draft order. It includes an extended timeline for submitting documents and taking actions as follows: 1) cease discharges to surface water and groundwater from WMUs, 2) submit a work plan to manage Skyrocket Pit wastewater, 3) submit a work plan to bring the FTR LCRS wastewater into compliance with WDRs, 4) submit a closure and postclosure maintenance plan for the three ODSs in compliance with Title 27 for Group B mine waste with appropriate financial assurances, 5) close the FTR to minimize infiltration of rain water and/or treat wastewater for discharge to land, 6) submit updated financial assurances for closure/postclosure maintenance, and 7) submit financial assurances for initiating and completing corrective action for all known and reasonably foreseeable releases.

Mgmt. Review _____
Legal Review _____

STAFF REPORT

MERIDIAN BEARTRACK COMPANY
MERIDIAN GOLD COMPANY
AND FELIX MINING COMPANY
ROYAL MOUNTAIN KING MINE FACILITY (RMKM)
CALAVERAS COUNTY

Introduction - Procedural History

On 15 March 2002, the Regional Board adopted Cease and Desist Order (CDO) No. 5-01-041 for discharges at Royal Mountain King Mine (RMKM) contrary to Closure Waste Discharge Requirements (WDRs) Order No. 5-01-040. The CDO named Meridian Beartrack Company, Meridian Gold Company and Felix Mining Company as Discharger. The Discharger petitioned the CDO to the SWRCB. The SWRCB issued a Draft Order in May 2002. The SWRCB Draft Order would have remanded the CDO to the Regional Board for further consideration of the impacts on background conditions at the site. The SWRCB deferred taking final action on the petition to allow Regional Board staff and the Discharger time to resolve the disputed issues, which we have been unable to accomplish. In order to conserve the resources of the Discharger and the State and Regional Boards, staff recommends that the Regional Board address the SWRCB's concerns as expressed in the Draft Order, rather than waiting for a formal remand. Regional Board staff believes it is more appropriate for the Regional Board to reconsider a revised CDO in light of the additional data analysis and discussions with the Discharger during the last year, rather than have the SWRCB issue a decision based on an outdated record.

Since the SWRCB's action in May 2002, Regional Board staff, including the Executive Officer, has had extensive technical and management meetings with the Discharger and their representatives. Regional Board staff has provided extensive analysis in technical memoranda, which included all historical and new data collected subsequent to the initial CDO adopted in March 2001. The Discharger and Regional Board staff has tried to resolve or at least narrow the issues. Regional Board staff concur with the Discharger that it is difficult to determine background water quality prior to RMKM's mining activities based on the lack of usable data and the extent of historic mining activities[1]. In this regard, Regional Board staff proposes to use the already established pre-RMKM mining, statistically derived, intrawell analysis of data to show water quality changes since RMKM began mining the area (~1987-1989). A revised Monitoring and Reporting Program will include a new Water Quality Protection Standards table, as well as additional monitoring points and constituents of concern.

This staff report provides background information on RMKM waste management unit waste classifications with a summary of violations, summary of SWRCB Draft Order contentions, remaining disputed issues with the Discharger, revision of WDRs, revision of the Monitoring and Reporting Program, and revisions to the Cease and Desist Order.

[1] The Hodson Fault District was highly productive during the 1890s and early 1900s when the area was worked on a large scale. The 120-stamp mill at the Royal mine, was one of the largest mills in California. Large amounts of copper or from the Keystone Union mines at Copperopolis were concentrated at the mill. Asbestos ore from the Jamestown area was treated in the mill.

Background

Royal Mountain King Mine (RMKM) is west of Highway 4 and south of Rock Creek Road near the town of Copperopolis, Calaveras County, as shown in Attachment A. The Discharger operated the facility for the mining and extraction of gold with a projected project lifetime of 25 years. Ore was mined from a series of open pits and milled at approximately 3,400 tons per day, which equates to 50,000,000 tons of waste rock distributed over approximately 197 acres. Active mining activities began in March 1989 and ceased in June 1994. The RMKM is located on the site of historic gold mining, known as the Hodson Fault District, dating back to the 1850s.

The Discharger mined gold ore from three open pits as Gold Knoll, Skyrocket, and North Pits. By its mining activities, the Discharger created seven waste management units (WMU):

- the Flotation Tailings Reservoir (FTR), a Group B (designated) mining waste management unit;
- the Leached Concentrate Residue Facility (LCRF), a Group B (designated) mining waste management unit;
- the Process Water Pond (PWP), a Group A (hazardous) mining waste management unit;
- three overburden disposal sites (ODSs) as the Flotation Tailings Reservoir ODS, Western ODS, and Gold Knoll ODS, containing Group B (designated) mining waste; and
- Skyrocket Pit, a Group C (non-designated) mining waste management unit.[2]

Attachment B is an aerial photograph of the RMKM site showing an oblique view of the facility with highlighted waste management units and creeks.

Waste Management Unit Classification

Waste Discharge Requirements (WDRs) Order No. 5-01-040 determine the Waste and Their Classification based on Title 27, Section 22480 as follows:

- Flotation Tailings Reservoir (WMU#1)

  - Flotation tailings <u>solids</u> stored in the FTR are Group C mining waste based on a net neutralization potential of 179 tons of $CaCO_3$ equivalent per 1000 tons of ore and the lack of any significant extractable substances using the deionized water waste extraction test (DI WET).
  - Flotation tailings <u>liquids</u> draining from the process water into the leachate collection and recovery system (LCRS) are Group B mining waste based on the presence and potential presence of flotation reagents or their breakdown products, some heavy metals in the flotation tailings liquid and elevated levels of total dissolved solids (TDS), which indicate a potential threat to groundwater and surface water quality.

[2] *Mining waste management units are regulated under Title 27, California Code of Regulations (Title 27), Division 2, Subdivision 1, Chapter 7, Subchapter 1, Mining Waste Management.*

- Leached Concentrate Residue Facility (WMU#2)

  - Liquid in the LCRF is a Group B mining waste based on expected pH and free cyanide concentrations.
  - Leached concentrate solids stored in the LCRF are Group B mining waste based on a net neutralization potential of 668 tons of $CaCO_3$ equivalent per 1000 tons or ore.

- Process Water Pond (WMU#3)

  - Liquid stored in the PWP are Group A mining waste based on hazardous concentrations of copper and cyanide.

- Overburden Disposal Sites (Group B Mining Waste) (contains excavated waste rock from the mineralized fault zone, Skyrocket Pit and North Pit-stockpiled on native ground, and waste rock from Gold Knoll and other waste rock discharged back into the excavated Gold Knoll pit.)

  - Overburden in the West, Gold Knoll, and FTR ODSs was conditionally classified as Group C mining waste in the original WDRs Order No. 88-176 because the material was non-acid generating. However, the WDRs did not allow any statistically significant increase in background concentrations of arsenic or any other inorganic constituents due to the disposal of overburden or other mine activity. The WDRs required the Discharger provide *financial assurance* for mitigation of any water quality impacts, including but not limited to covering the overburden piles with a clay cap (closure) and conducting any necessary groundwater or surface water remediation (corrective action).

  Subsequently, statistically significant increases were detected in several constituents downgradient of the ODSs. The leachate from these ODS have impacted ground and surface water. These impacts confirm that the wastes are Group B Mining Waste. A Group B Mining Waste, as described in Title 27 Section 22480, is a waste that contains "…nonhazardous soluble pollutants of concentrations which exceed water quality objectives for, or could cause, degradation of waters of the state."

- Skyrocket Pit (Group C Mining Waste)

  - Mining wastes from Group C are wastes from which any discharge would be in compliance with the applicable water quality control plan, including water quality objectives other than turbidity. The mined pit was also classified as Group C due to its intrinsic properties, the waste is readily containable by less stringent measures.

  - Continued discharge of wastewater from the FTR Leachate Collection and Removal System (LCRS) and Gold Knoll ODS to Skyrocket Pit caused a further rise in the water level and increasing concentrations of constituents of concern in Skyrocket Pit. The rise in water level within the pit caused seepage to surface water in the Littlejohns Creek Diversion and increases the potential for Skyrocket Pit to overflow.

- Skyrocket Pit wastewater contains concentrations of constituents of concern above water quality objectives and does not contain the wastewater; therefore, no longer meets the Group C Mining Waste classification.

Impacts from Waste Management Units – Skyrocket Pit, Gold Knoll ODS, FTR, FTR ODS, Western ODS

As described in WDRs Order No. 5-01-040, the waste management units are causing impacts on water quality in groundwater and surface water. Based upon groundwater monitoring data from Point of Compliance wells downgradient from the waste management units, the water quality at the RMKM facility has significantly changed. Intrawell statistical methods (comparison of changes in water quality in each well over time), performed by the Discharger, agree with this conclusion. The *4th Quarter 2003 Monitoring and Reporting Program* report, prepared by the Discharger, shows exceedances in water quality for TDS, ammonia, pH, arsenic, nitrate, sulfate, chloride, bicarbonate, manganese, and selenium in groundwater and sulfate, manganese, bicarbonate, nitrate, selenium and TDS in surface water since operations began in approximately 1989 to present.

Wastewater from the ODS piles is causing statistically significant increases in concentrations of waste constituents in the ground and surface water as seeps at the base of the waste rock piles. RMKM mining activities created the Skyrocket Pit and North Pit lakes. These pit lakes have been filled with a combination of groundwater by natural recharge and untreated wastewater per the Discharger's emergency transfers from other mining WMUs in violation of WDRs. Monitoring data indicate that the concentrations of arsenic, chloride, selenium, sulfate, and total dissolved solids (TDS) in Skyrocket Pit exceed water quality objectives. More specifically, TDS in Littlejohns Creek has increased from approximately 230 mg/L to an average of approximately 620 mg/L with a maximum of 2330 mg/L where seepage enters from Skyrocket Pit. At one point, arsenic levels in Skyrocket Pit approached 700 µg/L, which is nearly 70 times the Federal drinking water standard of 10 µg/L. Figure 1, on page 11, shows a comparison of arsenic in background surface water monitoring point SWM-1 to Flowers Reservoir outflow point SWM-3. A significant concern is the fact that Skyrocket Pit is leaking to Littlejohns Creek, which flows to Flowers Reservoir and the Delta. Arsenic in Flowers Reservoir now exceeds the Federal drinking water standard in the dry months. Increases in sulfate are observed in groundwater point of compliance wells associated with the FTR, FTR ODS, Western ODS, and Gold Knoll ODS. Figure 2, on page 14, shows a time-series graph of the marked increase in sulfate in groundwater monitoring point of compliance well GWM-30, which is downgradient from the FTR ODS. The FTR ODS includes waste rock from the phyllite, mineralized fault zone, and greenstone. GWM-30 is located in the greenstone formation, which does not contain an appreciable amount of sulfate based on the geochemistry of the host rock; therefore, increases in sulfate come from the waste rock.

Furthermore, the lake level in Skyrocket Pit has risen, which has caused seepage as surface water in the Littlejohns Creek Diversion near the creek elevation of 956 feet above mean sea level and increased the potential for Skyrocket Pit to overflow to surface water. Skyrocket Pit water elevation is approaching the spillway of the dam, which has been increased in height twice[3] to accommodate the high water level of the lake above the original water table. The dam was increased in height due to the Discharger's

[3] The design and construction of the Skyrocket Pit Dam is regulated by the Department of Water Resources, Division of Safety of Dams. Stage II was approved in late 1999. The spillway is 973 feet amsl; crest is 977 feet amsl.

continued transfer of wastewater from the FTR LCRS and Gold Knoll seeps, not solely from naturally occurring groundwater recharge.

The record shows that the Skyrocket Pit has received approximately 765 acre feet of polluted water, which was transferred to the pit lake from the FTR. The Discharger paid a $40,000 Administrative Civil Liability Claim (1994) for illegal transfer of partially treated PWP (hazardous, i.e., cyanide) and LCRF (designated) wastewater to the FTR in 1993. The Discharger then claimed another emergency transfer was necessary and illegally discharged FTR wastewater to Skyrocket Pit in violation of WDRs. Subsequently, seepage from Gold Knoll was found to be polluting surface water in the downgradient creek. The Discharger again pumped untreated wastewater to Skyrocket Pit on an "immediate short-term basis for the winter of 1997/1998." The Discharger discharged Gold Knoll ODS seepage into Skyrocket Pit from February 1998 to November 2000, two years longer than the "short term" period. Concentrations of sulfate, selenium, nickel, and TDS in this seepage failed to meet the transfer standards specified in WDRs No. 97-165 for wastewater transferred to Skyrocket Pit.

The Discharger submitted another emergency transfer document which requests the Regional Board accept the proposal to: (1) the lower of the Skyrocket Pit lake by transferring wastewater to the North Pit, which is not a WMU; (2) classify of North Pit wastewater as Group C; or (3) receive a waiver from the Board to transfer Group C wastewater into the North Pit. Regional Board staff question the wisdom of creating another waste management unit where seepage and or overtopping may also occur and which would result in the further reduction in water quality by commingling of waters. Furthermore, the intrinsic properties of North Pit (i.e., the waste is readily containable) would not qualify its classification as a Group C WMU under Title 27. In addition, causing another groundwater mound upgradient of Skyrocket Pit would require management of more water in the future, as water from North Pit would flow towards Skyrocket Pit. The inflow to Skyrocket pit would increase, making it harder to manage, and increasing the likelihood of Skyrocket Pit overflowing. Title 27, Section §22480(d) states, *" Treatment — Mining waste shall be treated or neutralized whenever feasible to minimize the threat to water quality and minimize the need to install waste containment structures."* The Discharger has had ample time to prepare, negotiate, and implement a management plan, in compliance with Title 27 (i.e., treated or neutralized) satisfactory to the Regional Board. Revising WDRs to allow the discharge of wastewater from Skyrocket Pit to North Pit is not appropriate. Also requesting the Regional Board to consider a waiver for an emergency transfer should not be considered when there are other options available (e.g., treatment and NPDES discharge).

The 1993 transfer and subsequent violations accumulated over the years are tabulated in Attachment C (SWIM database). Attachment C also notes the Regional Board's enforcement actions (i.e., ACL).

SWRCB Draft Order

The Draft Order would have remanded the CDO to the Regional Board for reconsideration of several factors. These factors were the length of time for compliance; background water quality; and technical and economic feasibility of compliance.[4] The Draft Order concluded, "… there are some remaining issues that cannot be resolved based on the record in the present proceeding involving review of the

[4] The Draft Order also found that the Regional Board properly named Meridian Gold Company. Staff does not believe Meridian Gold Company is currently challenging this finding.

cease and desist order. … [T]he matter should be remanded to the Regional Board to reevaluate background water quality conditions considering the naturally elevated concentrations of inorganic constituents in the vicinity of the RMKM site. Following that evaluation, the Regional Board should review available regulatory approaches to closure requirements for RMKM and establish closure requirements based on consideration of background water quality conditions and the technologic and economic feasibility of measures to protect water quality." Although the State Board did not adopt a final order, staff recommends that the Regional Board reconsider the CDO in light of the State Board staff's concerns so that it is not necessary for the State Board to remand or vacate the CDO. In addition, staff recommends that the Board reconsider the existing waste management unit classifications to address the recommendation to "review available regulatory alternatives."

The Draft Order found that some of the timelines in the CDO were too short. Specifically, the CDO required the Discharger to cease discharge of LCRS wastewater to Skyrocket Pit and to cease surface water discharges within three months after submitting the respective workplan. The revised CDO allows the Discharger five months to submit work plans, and a year after submittal of work plans to complete the work on these tasks. In addition, the Discharger has now had an additional two years to comply with the WDRs since the Regional Board issued the first CDO.

Next, the Draft Order concluded, "the Regional Board gave insufficient consideration to evidence of poor background water quality conditions and to the feasibility of complying with the tasks specified in the cease and desist order." As a result, Regional Board staff has performed an extensive analysis of natural and historic background water quality. This analysis considered all data and analysis provided by the Discharger, and staff's own analysis of the data. Staff's analysis included trend analyses of historic water quality, and fingerprinting to demonstrate the impacts of releases from the site.

The Draft Order stated:

> A primary objective of the cease and desist order is to prevent or significantly reduce discharges of water with concentrations of TDS and other constituents that exceed background concentrations of the receiving water. The limited information available on historic water quality conditions in the RMKM area makes it difficult to compare surface and ground water quality during the pre-1857 period (natural background or pre-disturbance conditions), the 1857-1988 period (historic mining period prior to operation of RMKM), and the post-1988 period (RMKM mining and mine closure period). However, the available data indicates that elevated ground water concentrations of TDS and other inorganic constituents are the result of salt-bearing geologic formations and are likely to have existed in ground water prior to mining in the area. For example, on July 24, 1988, before initiation of RMKM activities, ground water from the Caranza (domestic) well contained 3,310 mg/l of chloride, 2,800 mg/l of sulfate, and 10,400 mg/l of TDS. The Caranza well is located off the RMKM site, approximately 4,000 feet south of the Skyrocket Pit, within the Salt Spring Slate phyllite formation, but well beyond any historic mining impacts. Geographical names such as Salt Creek and Salt Spring Valley for locations upgradient and northwest of RMKM are also indicators of the naturally-occurring, highly mineralized surface and ground water in the area of the Salt Spring Slate formation.
>
> Although RMKM has had some negative impact on ground water, the majority of the problem *may be* due to naturally occurring conditions. [Emphasis added.] In some areas, ground water

> emerges as surface flow in the form of seeps and springs and at topographical depressions in areas that have not been mined. Discharge of ground water to the surface in the RMKM area is a natural occurrence. As in the case of ground water, TDS concentrations in surface water in the RMKM area are highly variable. The large amount of material that has been relocated and other mining-related changes have affected the hydrogeology of the RMKM site. TDS concentrations in some areas are presently at or below pre-RMKM levels while concentrations in other areas have increased. (Draft Order at 11.)

Due to the difficulty in determining pre-mining (i.e., pre-1857) conditions, the current staff analysis is based on pre-RMKM conditions. This change simplifies the analysis of historic background. Importantly, the Draft Order did not conclude that high levels of TDS and other constituents *were* naturally occurring, only that the record was inadequate. Regional Board staff has augmented the record to include the necessary analysis. The analysis is discussed below in more detail. In addition, SWRCB *Technical Review* in support of the Draft Order cited older data but did not discuss data that are more recent. Regional Board staff's analysis considers additional data and analysis developed since the Board issued the CDO.

After the State Board issued the Draft Order, a Technical Senior Engineering Geologist from the Region's Redding office completed an independent review of the data submitted to the State Board. He concluded: "The hydrogeology and water chemistry at the RMKM site is quite complex. This makes it difficult to determine what is 'background' water quality and how much impact the waste management units have had on ground water quality. However, even taking this difficulty into account, based on the analysis done by the Regional Board staff, it is apparent the RMKM has impacted surface and groundwater quality. Further, it is also apparent that containment structures required by Title 27 will help mitigate much of these impacts."

Finally, with respect to technologic and economic feasibility, the Draft Order concluded:

> Placing additional clay cover material over the overburden disposal sites would not prevent ground water infiltration and discharge from those areas. Isolation of the overburden disposal sites from ground water inflow would require installing extensive subsurface cutoff walls or removing approximately 50 million tons of mining overburden stockpiles that are distributed over an area of approximately 197 acres.[5] At a minimum cost of $2 per ton, relocating 50 million tons of mining waste from the overburden disposal sites would cost approximately $100 million. In view of the fact that ground water downgradient of the overburden disposal sites does not appear to be significantly different than what was present under natural conditions, the cost of relocating or attempting to further isolate the material in the overburden disposal sites does not appear to be justified. (Draft Order at 12.)

This conclusion was largely based on State Board Resolution 92-49, which provides standards for site cleanup. It is not appropriate to analyze this site closure as a cleanup, since the closure goals are to prevent further degradation of water quality rather than to clean up any existing impacts. Even if this were a cleanup, Resolution 92-49 only permits cleanup levels less stringent than background if there is

[5] Although installation of a subsurface cutoff wall could reduce ground water inflow to the overburden disposal sites, it could also redirect ground water flow into areas that would generate higher TDS concentrations.

no impairment of beneficial uses and water quality objectives are not violated. (Res. 92-49, Section III.G.) As discussed in the *Water Quality Impact Report*, the data demonstrate both impairment of beneficial uses and water quality objectives.

The Draft Order's approach is essentially to undertake a cost/benefit analysis to mine closure sites. This approach finds no support in Title 27, which permits a feasibility analysis only for engineered alternatives that meet otherwise applicable performance standards. (27 CCR 20080(b).) Even if a cost/benefit analysis were appropriate, the site's adverse impacts on ground and surface water quality, and the conclusion that Group B closure would avoid these impacts, tip the balance in favor of Group B closure requirements. Moreover, the Draft Order considered only one closure alternative. The Discharger has the burden of developing alternatives that comply with Title 27, and is free to select the most cost-effective alternative that meets regulatory requirements.

Disputed Issues

The following is a brief discussion of some of the outstanding legal and policy issues, with a summary of staff's analysis.

- **The need to develop "technically defensible" background levels**

The Discharger petitioned the Revised Monitoring and Reporting Program Order No. 5-01-040, dated 5 March 2002, which includes Water Quality Protection Standards (WQPS) based on naturally occurring background water quality. Subsequent to the State Board Draft Order, Regional Board staff has performed a more in-depth geochemical study of the constituents that make up total dissolved solids (TDS). Staff believes there is adequate characterization of the site to determine what the background levels were before the Discharger commenced mining activities (~1987-1989) at the site and to determine that leachate and other releases at the site are negatively impacting water quality at and downgradient of the site. These new WQPSs will be included in a revised Monitoring and Reporting Program.

The geochemical fingerprinting done by Board staff shows if the major ions are used to identify changes in water chemistry and compared to natural salts (or pre-RMK salts) that a release can be identified. In addition, these major ions tend to be more soluble and more mobile than the trace metals and would be the initial indicators of a release. Over time, these trace metals would be detected or found at higher concentrations in downgradient monitoring wells. This is exactly what was found by a USEPA study on developing monitoring system for mines.[6] The first indication of a release is a change in the water chemistry using the major ions. The discharger is using trace metals as a release indicator. This has several inherent problems, for example, manganese is used to indicate a release has not occurred from the FTR to the groundwater. The processing of ore rock probably caused manganese to be released into FTR solution, however, manganese concentrations are relatively low and could be diluted to non-detectable concentrations or could precipitate out as an insoluble solid before it reached a downgradient monitoring well. Because of this, trace metals such as manganese and arsenic are not conservative

[6] United States Environmental Protection Agency, "Characterization of Mine Leachates and the Development of a Ground-Water Monitoring Strategy for Mine Sites," Office of Research and Development, Washington, D.C. 20460 (EPA/600/SR-99/007 February 1999)

indicators of a release at this site; therefore, they should not be the initial indicator of whether a release has occurred.

- **Whether impacts from mine construction and operations are "discharges" of "waste"**

Title 27, CCR, Section §22480, in part, states, "(a) Mining waste is waste from the mining and processing of ores and mineral commodities. Mining waste includes: (1) overburden; (2) natural geologic material which have been removed or relocated but have not been processed (waste rock); and (3) the solid residues, sludges, and liquids from the processing of ores and mineral commodities." The Title 27 provisions that apply to mining waste clearly require the discharger to contain waste rock to prevent the continued leaching of acid rock drainage, TDS and other waste constituents. As discussed below, to date the Regional Board has not required the Discharger to clean up the pollution that has already discharged from the waste management units. Rather at this time, the Regional Board seeks to require the Discharger to close the WMUs in compliance with Title 27, which imposes containment and closure requirements to prevent releases of high TDS wastewater and metals, and thereby remove the source of the release. With respect to Skyrocket Pit, the Discharger must comply with Specification B.12 of the WDRs, which only permits transfer of FTR/LCRS waste if the Discharger can demonstrate that Skyrocket will not overtop or seep to surface water.

The Discharger apparently takes the position that the Regional Board cannot regulate water quality impacts caused by changes to watercourses that result from the mining activities. Littlejohns Creek and or other creeks affected by discharges, carry high-TDS leachate from the overburden disposal sites, and cause groundwater mounding to move high-TDS runoff to surface waters. These impacts demonstrate that the Discharger is not containing the waste (control the source) as required by Title 27.

- **The significance of releases from the WMUs**

Two of the critical issues at the RMK site are (1) whether Title 27's prescriptive cover requirements apply to the ODS's; and (2) how to manage Skyrocket Pit and the FTR/LCRS.

The SWRCB's Draft Order (tentatively) concluded that closure of the ODS's as Group B sites would have little beneficial effect on water quality. This conclusion was based on the assumption that impacts may be due to naturally occurring conditions. The Draft Order directed the Regional Board to "reevaluate **background water quality** *(emphasis supplied*) conditions considering the naturally elevated concentrations of inorganic constituents in the vicinity of the RMKM site." Working with the Discharger's representatives, staff has extensively reviewed and analyzed background data. Trend analyses by staff take into account background conditions, as they existed prior to the Discharger's activities at the site (~1987-1989). In addition, staff has identified the changes in the water chemistry or characteristics of the ground and surface water since RMKM's mining, which is distinctly different from the naturally occurring water quality characteristics. Neither the Discharger's data nor the staff analysis supports a conclusion that the water quality degradation is due to natural conditions or that it would occur absent RMKM's physical disturbance of the site. Moreover, Group B waste is defined as "mining wastes that consist of or contain nonhazardous soluble pollutants of concentrations which … could cause, degradation of waters of the state." The data indicate that the mining wastes *are causing* significant degradation. Regional Board staff believes that Title 27 requires the Discharger comply with

prescriptive cover requirements, and that compliance with those requirements will significantly improve water quality. The capping of the ODSs will appreciably reduce the infiltration of rainwater. By this reduction, the mass of outflow to once-intermittent creeks will be minimized, as well as the mass loading of concentrations of constituents dissolved in the outflow. Furthermore, closing the ODSs with an impermeable cap serves as source control to prevent groundwater degradation.

Regarding Skyrocket Pit and the FTR, the Regional Board reclassified Skyrocket Pit as a WMU at the Discharger's request so the Discharger could transfer FTR/LCRS waste to Skyrocket upon approval of the Regional Board[7]. Since the Discharger has transferred FTR/LCRS and Gold Knoll ODS Group B wastewater to Skyrocket Pit, Skyrocket Pit must be closed as a WMU under Title 27. The WDRs permit the transfer of FTR/LCRS leachate only if the Regional Board approves a management plan for Skyrocket Pit, which the Regional Board has not done because the Discharger has not submitted a long-term management plan.

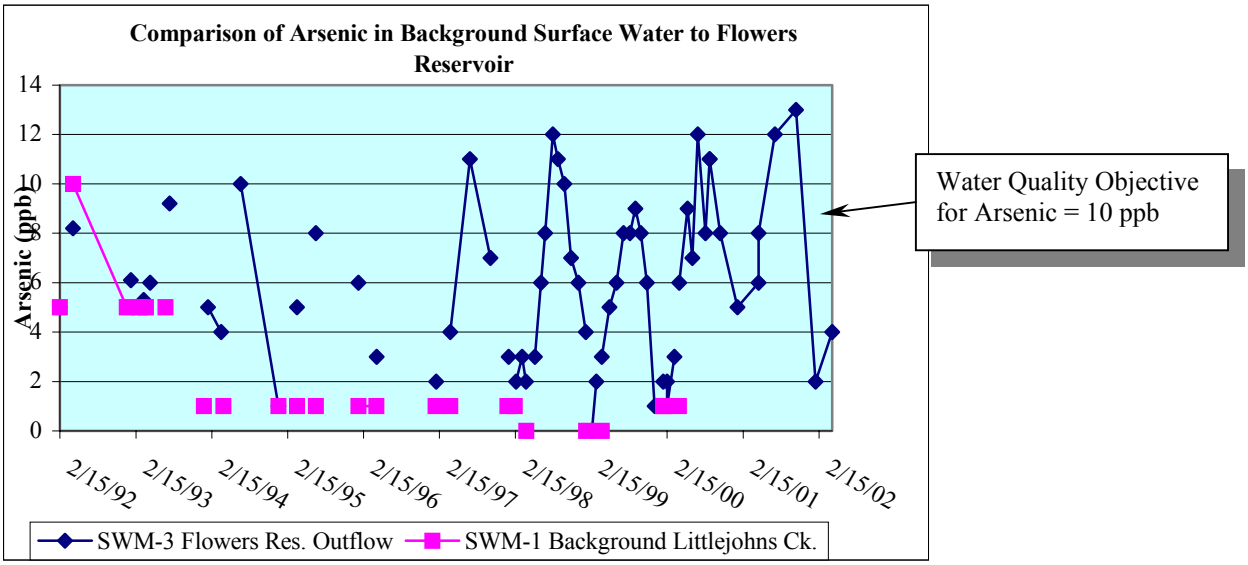
Measurably significant water quality degradation also results in noncompliance with Resolution 68-16 (the antidegradation policy) for high quality waters, and WDRs Discharge Specification B.2, which states: "The discharge of wastes shall not cause water quality degradation by allowing a statistically significant increase over background or baseline concentrations."

Discharges from Skyrocket Pit fail to comply with the Clean Water Act if there is any "addition" of a pollutant to surface water. Since the Discharger has transferred FTR leachate to Skyrocket, there is an "addition of a pollutant" because the leachate would not ordinarily discharge from Skyrocket. Skyrocket Pit and the ODSs collect and channel the leachate to surface water; therefore, they are considered point source discharges.

The following time-series graph (Figure 1) shows the comparison of background surface water in Littlejohns Creek upgradient from mining activities with downstream Flowers Reservoir water quality. The concentration of arsenic in Flowers Reservoir is increasing above the water quality goal of 10 ppb (Basin Plan Numerical Objective & USEPA Primary MCL). The rising and lowering of concentrations depicts the seasonality of summer (high concentrations) and winter (dilution by rainfall) releases.

[7] Even absent this explicit reclassification, a surface impoundment that receives mining waste is subject to Title 27 closure requirements as a WMU.

Figure 1.



- **Whether a discharger is responsible for addressing water quality impacts that the discharger did not cause**

Staff does not believe that this point is in dispute; Title 27 obviously allows a discharger to demonstrate other sources (Section 20425(f).). Similarly, staff agrees that water quality is highly variable in the area of the site, and that the Discharger does not have to clean up the entire site to the best water quality found anywhere at the site. However, staff disagrees that the Discharger's data demonstrate that *other sources* have caused the degradation.

- **Whether the existing ODS covers comply with Title 27 requirements for engineered alternatives, and whether cost considerations can justify avoiding the prescriptive or engineered cover requirements**

Title 27 Section 20080(c) permits engineered alternatives where attaining the prescriptive standard: "(1) is unreasonably and unnecessarily burdensome and will cost substantially more than alternatives which meet the criteria in ¶(b); or (2) is impractical and will not promote attainment of applicable performance standards.", and an engineered alternative has to be "consistent with the performance goal addressed by the particular construction or prescriptive standard; *and* (B) affords equivalent protection against water quality impairment." (Section 20080(b), emphasis added.) The Discharger has not provided an engineered alternative that meets the performance goals of a cover as prescribed by Title 27. Whatever is proposed has to meet the performance standard before the engineered alternative can be considered and then a determination can be made whether a proposed engineered alternative is not feasible as described in Title 27 Section 20080(c). The performance goal of the cover is to "…attain an hydraulic conductivity of either $1x10^{-6}$ cm/sec (i.e., 1 ft/yr) or less, or equal to the hydraulic conductivity of any bottom liner system or underlying natural geologic materials, whichever is less permeable, or another design which provides a correspondingly low through-flow rate throughout the post-closure maintenance period." "For such Units, after closure, the final cover constitutes the Unit's principal waste containment characteristic;" Staff has concluded that the existing covers (1 foot of soil with

vegetation/30% with some impermeable material) do not afford equivalent protection against water quality impairment.

Specific provisions for engineered alternatives apply to final cover requirements for Group A and B waste piles: "The RWQCB can allow any alternative final cover design that it finds will continue to isolate the waste in the Unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards under ¶(a)(1-3)." (Section 21090(a).) The applicable standards include a foundation layer, a low-hydraulic-conductivity layer and an erosion resistant layer. The low-hydraulic-conductivity layer must be compacted to attain $1x10^{-6}$ cm/sec or less.[8] The current covers have been tested at $1x10^{-5}$ cm/sec. In addition, the covers only overlie a small portion of the ODS's (~30%). This does not satisfy either Section 20080 or Section 21090.

The Discharger's *Closure Plan Amendment, Flotation Tailing Reservoir (FTR), Skyrocket Pit (SRP), and Overburden Disposal Sites (ODSs),* dated February 2003, does not comply with the minimum standards for closure of the ODSs that "release" Group B mining waste. Proposed closure entails the construction of wetlands downgradient of each seepage point of discharge, allows Skyrocket Pit reach "natural equilibrium over time" and the plugging of the FTR LCRS. The Discharger's letter of 3 March 2003 informed Board staff that the FTR LCRS outlet valve was shutoff on 1 March 2003, which does not comply with WDRs or Title 27. The closure report does not include a technicologic or economic feasibility study to close the WMUs nor an estimate of financial assurances in compliance with the prescriptive standards pursuant to WDRs or Title 27.

- **Whether a discharger is responsible for high TDS caused by reduced surface permeability resulting in reduced recharge, or by upwelling of poor quality water.**

We agree with the Discharger that mining activities have altered the recharge area by construction of three lined waste management units, disposal of 50 million tons of waste rock, and open hole excavation of three or more historically mined areas. With regards to historic mining in the area, the Hodson District has been almost continuously mined since the area was originally worked prior to 1883. Extensive underground workings and open pit mining was reported to have occurred.[9] The Hodson District was worked on a large scale as part of the West Gold Belt of the Sierra Nevada Province.[10]

Indeed, historical and the Discharger's mining activities have significantly altered the local topography, groundwater flow regime, groundwater quality, surface water flow patterns, and surface water quality. General information from U.S. Geological Survey maps, site visits, and photographs, indicates that creeks in the area were intermittent prior to the year-round discharge. Year-round flow is caused from seepage emanating from tons of mining waste rock disposed on the surface (FTR ODS, West ODS), the excavated pit refilled with waste rock (Gold Knoll ODS), and seepage from huge pit lakes containing millions of gallons of polluted water (Skyrocket Pit and North Pit). Inspection photos taken during a

[8] Alternatively, this layer must equal the permeability of the underlying natural geologic materials, if less permeable than the prescriptive standard.

[9] California Division of Mines and Geology (CDMG), Mines and Mineral Resources of Calaveras County, California, County Report Number Two, 1962 [William B. Clark and Philip A. Lydon, Mining Geologists]

[10] Department of Conservation, Division of Mines and Geology, Gold Districts of California, Bulletin 193, 1998 [William B. Clark, Mining Geologist]

site visit during the hot, summer month of July 2002 provide evidence of ponding at the base of overburden disposal sites and perennial flow of creeks in the dry season, which were previously intermittent creeks prior to the Discharger's mining activities. The inspection also noted discharges associated with the West ODS and Gold Knoll ODS. The Discharger's WDRs prohibit all discharges of waste to surface water drainage courses. (Regional Board Order 5-01-040, p. 17, Discharge Prohibition A.2.)

We agree that the phyllite formation may impart a higher sodium chloride based TDS level than the greenstone formation or the mineralized fault zone and that identified springs upwell salty water to the surface in specific areas. Most importantly, even if background TDS in groundwater is determined to be high in specific areas (springs), the Discharger is allowing waste discharge from pit lakes and overburden disposal sites, causing a discharge of pollutants to surface water, that must be prevented in accordance with Title 27, Section 20420 for Group A and Group B Mining Units.

Staff agrees that a discharger is not responsible for upwelling of naturally poor quality water, where the runoff or leachate has the same quality as the upwelling water. However, the Discharger has not demonstrated that point source discharges from the ODSs are solely from upwelling groundwater into the mining waste piles. Even if it is, if water is upwelling into the ODSs and degrading further, there is a "release" under Title 27. Furthermore, the *significant physical evidence of a release* (Title 27, Section 20385) from the ODSs, as demonstrated by increased flow in once-intermittent creeks, evidences a "release" under Title 27.

Revision of WDRs

The Discharger has requested WDRs be revised in order to reclassify the ODSs and FTR liquid from Group B mining wastes to Group C. Additionally, the Discharger has requested that WDRs be revised to clarify that shutting the FTR Leachate Concentrate Recovery System (LCRS) is an acceptable closure option of the FTR.

Because data shows "measurably significant" impacts to water quality in groundwater and surface water that are not naturally occurring, Regional Board staff has determined that reclassifying the FTR liquid to Group C would not meet the requirements of Title 27. Furthermore, plugging the FTR LCRS would cause leachate to pond behind the foundation dam and increase the hydraulic head on the LCRS as part of the liner system below the tailings (fine grained material). This liner system was compromised by flooding caused by illegal transfers of wastewater from the Process Water Pond (Group A-hazardous) in 1993. The Discharger paid a $40,000 Administrative Civil Liability (ACL) fine for this violation. Data clearly show impacts from this activity based on the downgradient-monitoring well. The Discharger's recent *Closure Plan Amendment FTR, Skyrocket Pit, & ODSs*[11],states, *"Closure of the LCRS will cause the water to back up into the tailings."* The report contends that wastewater leakage through the FTR liner and embankment is appropriate because the leachate is of the same water quality as groundwater. We do not concur with this assessment.

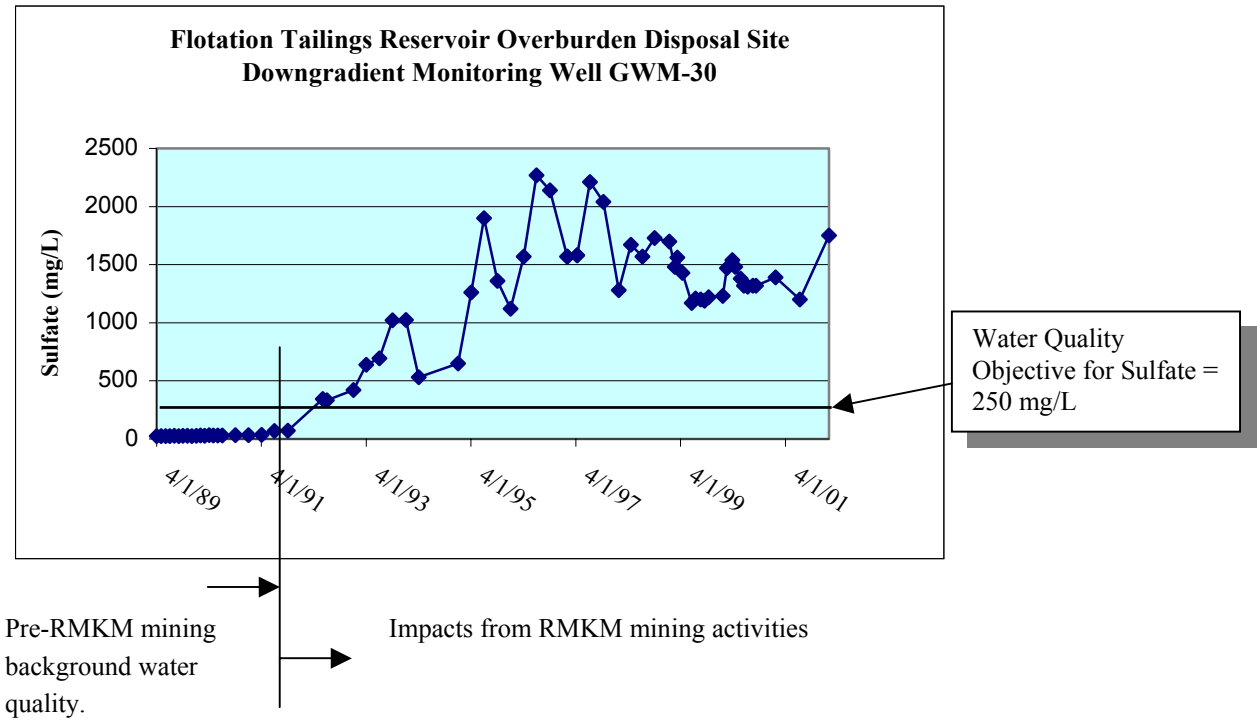
[11] Closure Plan Amendment, FTR, Skyrocket Pit, and ODSs, Royal Mountain King Mine, prepared by Ian P.G. Hutchison of TRC and Alan W. Bradford, GeoSyntec (February 2003)

Revision of Monitoring and Reporting Program and Water Quality Protection Standards

WDRs require the Discharger develop "background" concentration limits for constituents of concern prior to disturbing the land by their mining activities in order to determine changes in water quality over time as mining activities progressed. These are called Water Quality Protection Standards in accordance with Title 27 (Section 20390). Groundwater water quality is determined by sampling monitoring wells located upgradient, cross gradient, and downgradient from waste management units, as well as other mining disturbances on a quarterly basis. Surface water samples are collected from creeks upgradient of mining activities, seepage areas from the ODSs and Skyrocket Pit, downgradient locations in the creeks, and the offsite Flowers Reservoir associated with the Diamond XX Estates also on a quarterly basis. The data is evaluated and reported in accordance with the Closure Monitoring and Reporting Program Order No. 5-01-040.

As discussed earlier in this staff report, the Water Quality Protection Standards will be revised to reflect pre-RMKM mining activities that occurred around 1987 to 1989. Previously, Regional Board staff used *inter*well analysis to determine historic (1850s) background; upon further geochemical analysis of the data staff has determined that the use of *intra*well analysis is applicable and meets the intent of the Detection Monitoring Program pursuant to Title 27. This analysis shows statistically significant changes from pre-RMKM mining to present. The following time-series plot of sulfate in GWM-30 is an example of impacted groundwater from pre-RMKM mining to present:

Figure 2.



Note the low concentration of sulfate monitored in groundwater during the pre-RMKM mining period and the increasing trend since mining activities progressed. Regional Board staff considers this increasing trend as a "measurably significant" evidence of a release. Furthermore, sulfate has risen

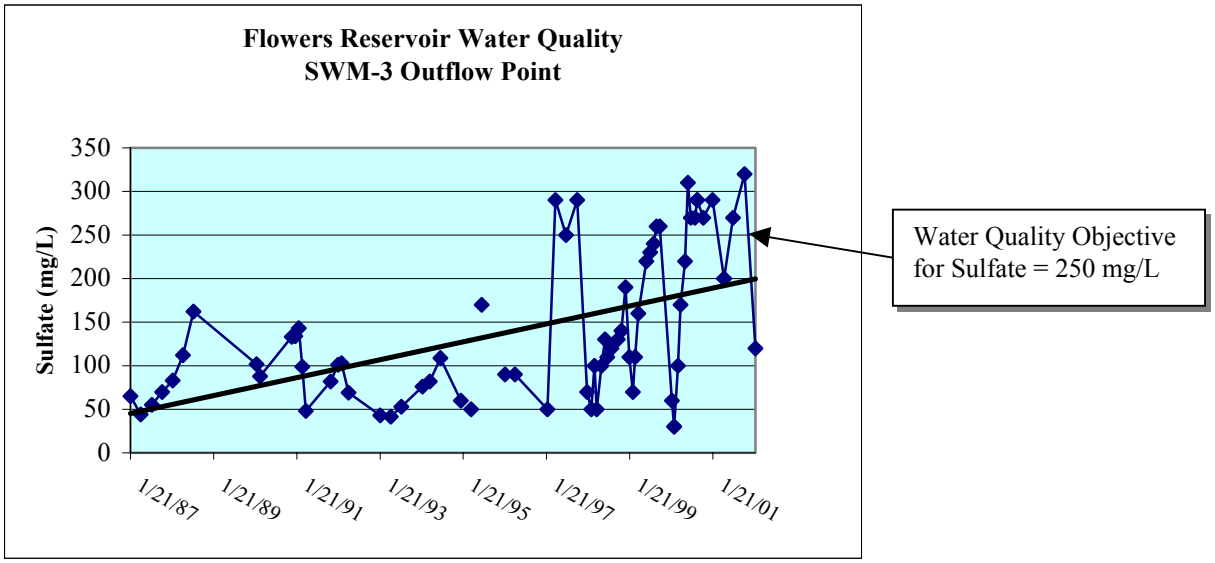
above the water quality objective of 250 mg/L as the California Secondary Maximum Contaminant Level (MCL) for groundwater and surface water.

The Discharger believes that the changes observed in groundwater and surface water (increases in TDS, sulfate, other minerals and metals) comes from naturally occurring salty conditions and that the "observed water quality changes" are insignificant. We concur that the site geology is complex, with mineralization and a fractured rock groundwater flow regime making interpretation of the hydrogeology and groundwater chemistry more difficult. The significant features of the site include geologic formations as greenstone to the east bounded by a phyllite to the west. The mineralized zone/boundary between the two formations can be defined by two northwest-southeast trending faults: the Littlejohn Fault and the Hobson Fault. The mining conducted by the Discharger includes (from southeast to northwest) the Gold Knoll Pit, the Skyrocket Pit, and the North Pit, which span the mineralized fault zone. In general, the ground water flow and chemistry characteristics between the two formations, as well as the mineralized fault and fracture zone differ considerably, leading to the complexity of interpreting data from the site. (See Attachment D geology map with WMUs and monitoring points.)

The rock type and association with the mineralized fault zone are the groundwater controlling factors in water chemistry, as expected. These differences in water chemistry have characteristic constituents that can be fingerprinted. Therefore, the characteristic constituents of the phyllite and greenstone can be traced. The excavation of the pits moved 50 million tons of waste rock to different stockpiles on native ground (unlined) as overburden disposal sites (ODSs). Wastewater that leaches from these ODSs and from the Skyrocket Pit surfaces as seeps in once-ephemeral creeks and to groundwater. A mixture of waste rock from excavation of the faulted mineralized zone, phyllite formation and greenstone formation was stockpiled on both the phyllite side of the fault and the greenstone side of the fault. As rainwater flows through the crushed rock (more exposed surface area) minerals and metals are oxidized. Percolating rainwater flushes these oxidized minerals and metals to surface water and groundwater as dissolved constituents or leachate. Therefore, the leachate imparts a different chemical fingerprint than the host rock/mineralized fault zone.

In this regard, Regional Board staff has performed an in-depth evaluation of the rock chemistry characteristics. Regional Board staff's analysis clearly shows notable water quality changes in chemistry at monitoring points associated with the waste management units. There is also evidence that discharges from the site are impacting the downgradient Flowers Reservoir associated with the Diamond XX Estates. The following time-series chart (Figure 3) shows increasing sulfate in the surface water monitoring location SWM-3 sampled at the outflow of Flower's Reservoir within the Diamond XX Estates.

Figure 3.



Note the linear trend line showing the increasing concentration of sulfate in the reservoir lake. The rising and lowering of concentrations depicts the seasonality of summer (high concentrations) and winter (dilution by rainfall) releases.

We have reissued the Closure Monitoring and Reporting Program (MRP) Order No. 5-01-040 on 25 March 2003. This will supercede the 5 March 2002 Revised MRP, resolving all issues raised in the Discharger's second petition (A-1469).

In conclusion, Regional Board staff has determined that background Water Quality Protection Standards can be utilized based on pre-RMKM mining data (~1987-1989).

NPDES Issues

The Discharger claims that discharges from the site represent naturally occurring background conditions and therefore, an NPDES permit is not necessary now or in the future, for existing seeps or future overflows from Skyrocket Pit.

Regional Board staff has sent the Discharger formal notice requiring completion of its NPDES application. The additional information necessary to complete the Report of Waste Discharge includes:

- Complete characterization of each of the five different sources of wastewater discharge. The first three consist of overburden disposal unit springs, seepage and associated storm water runoff and the two other sources consist of leachate from the flotation tailings reservoir (FTR) and future overflows and/or current seepages from the inundated Skyrocket open-pit mine. The wastewater characterization must include California Toxic Rule constituents (at appropriate detection levels to

determine compliance with water quality objectives). Each discharge must also be analyzed for three species chronic and acute toxicity.

- A description of proposed treatment units to be used to treat the wastewater and achieve water quality objectives.

- All proposed discharges would be to Littlejohns Creek, Clover Creek, and unnamed tributaries to both creeks. These Creeks are all tributary to downstream Flowers Reservoir, which is tributary to the San Joaquin River. A complete characterization, including water quality and flow characteristics of all receiving waters discharging into including unnamed tributaries, Littlejohns Creek, Clover Creek, and Flowers Reservoir (to determine if assimilative capacity exists).

- Submission of appropriate filing fee based on combined maximum discharge flows.

If a use attainability analysis and subsequent basin plan amendment is a part of the Discharger's proposal to meet water quality objectives in the receiving waters, then the NPDES application must address steps the Discharger will take to justify the amendment(s) and a discussion of the time necessary to achieve the change in beneficial uses.

Revision of Cease and Desist Order

The time schedule in CDO 5-01-041 must be updated to account for the passage of time that resulted from our efforts to resolve outstanding disputes regarding site closure. In addition, we wish to augment the record to address the concerns that State Board staff expressed in Draft Order dated 15 April 2002. We hope that a streamlined record that includes the analysis developed since the Regional Board issued the CDO will assist the Regional and State Boards to address the policy and legal issues regarding site closure. Accordingly, staff recommends that the Regional Board rescind CDO 5-01-041 as part of a revised CDO.

This revised CDO includes additional findings since the original Order was petitioned by the Discharger showing our efforts in attempting to resolve disputed issues. The CDO includes a task list with scheduled compliance dates designed to allow ample time to perform closure activities, which also allows the Discharger to spread the costs of closure over time.

Regional Board staff recommends the discharger be ordered to comply with waste discharge requirements through compliance with the following time schedule:

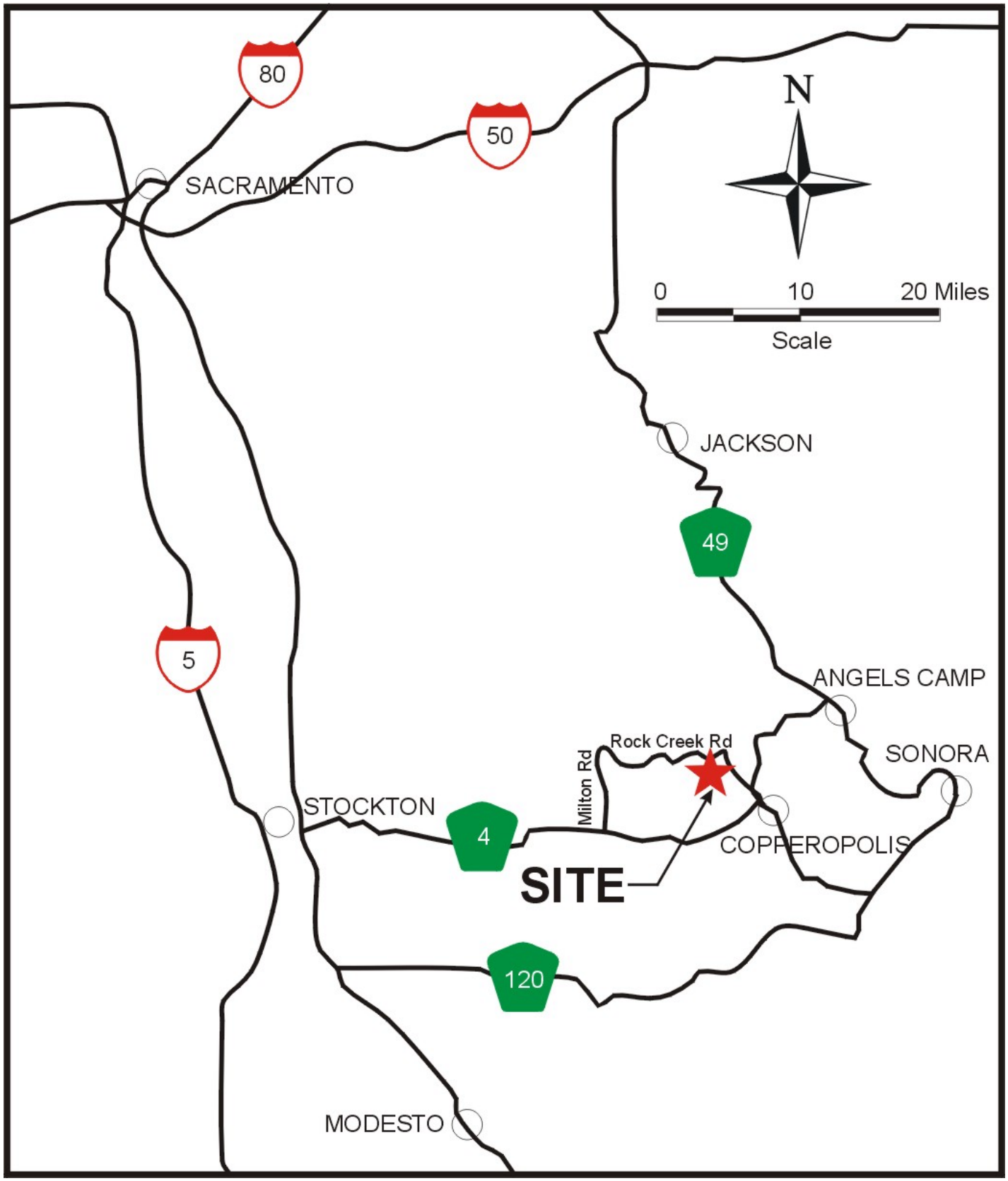
Task	Due Date
a. Submit a work plan with a proposal to cease: 1) discharges to surface water caused by Skyrocket Pit and how the pit lake will be managed to prevent discharges, and 2) discharges of leachate from the ODSs to surface water and groundwater. Any proposed discharges of wastewater to surface water must comply with the Federal Clean Water Act (i.e., NPDES).	**1 September 2003**
b. Submit a work plan with a proposal to prevent the buildup of hydraulic head on the FTR liner system and how the Group B wastewater will be managed to prevent discharges.	**1 September 2004**
c. Cease dischargers of leachate from the ODSs to surface water.	**1 September 2004**
d. Cease discharges to surface water caused by Skyrocket Pit.	**1 September 2004**
e. Submit a detailed closure and postclosure maintenance plan and phased closure schedule of the three ODSs in compliance with Title 27 requirements for Group B mine waste. The plans shall include detailed cost estimates. The plan shall include a demonstration of assurances of financial responsibility to ensure closure and postclosure maintenance of each waste management unit in accordance with its approved closure and postclosure maintenance plans.	**1 July 2004**
f. Submit plans with detailed cost estimates and a demonstration of assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management units.	**1 July 2004**
g. Complete closure of the three ODSs according to the above approved plans and begin postclosure maintenance.	**1 October 2006**

Recommendation

Staff recommend the Regional Board rescind Cease and Desist Order No. 5-01-041 and adopt the proposed revised Cease and Desist Order.

KAS:RMK Staff Rpt CDO 2003

Attachment A



ROYAL MOUNTAIN KING MINE, CALAVERAS COUNTY

Attachment B

Royal Mountain King Mine, Calaveras County
- Waste Management Units
- Historic Gold Mines
- Creeks

Royal Mountain King Mine, Calaveras County
Violation/Enforcement History

# Viol	Enf Id#	Viol seq#	Occur Date	Description	Enf order #	Eff date	Compl date	Description
1	6144	none			94-520	4-Aug-94	3-Sep-94	Violation of Order 91-195 & Section 13264(A) of Clean Water Code. Emergency treatment and transfer of PWP to FTR. Ponding in LCRF.
2		10680	27-Jan-93	WMU #3 not containing heavy precip. event (<100 yr). Solution being discharged to WMU#1. Maintaining 2 ft. freeboard in WMU #3. Emergency Plan w/pump, treat & sampling procedures submitted.				
3		10767	29-Jul-93	Pumping water from Skyrocket Pit to FTR. Violation of Order 91-195 Discharge Prohibitions A.2 & A.5.				
4		10894	27-Jan-95	WMU #1 receiving overflow from watershed pond upgradient.				
5		11271	18-Aug-98	Gold Knoll seepage is still being discharged to Skyrocket Pit Lake-Violation of WDRs. Seepage flow about 10 gpm.				
6	21738	55546	30-Sep-99	Third quarter 1999 monitoring report addendum did not completely address our comments on the third quarter 1999 monitoring report		21-Mar-00	21-Apr-00	Staff letter explaining and reiterating initial request
7	21757	55567	30-Jun-99	2nd Quarter 1999 Monitoring Report is deficient.		21-Sep-99	27-Oct-99	21 September 1999 staff letter required Discharger address comments on monitoring report deficiencies.
8	21758	none				21-Dec-99	15-Apr-00	21 December 1999 staff letter required several concerns be addressed in future monitoring reports.
9	21759	55568	27-Oct-99	2nd Quarter 1999 Monitoring Report Addendum did not adequately address 21 September 1999 comment letter.		21-Dec-99	15-Apr-00	21 December 1999 staff letter required several concerns be addressed in future monitoring reports.
10	21760	55568				23-Dec-99	23-Feb-00	23 December 1999 staff letter required addendum to 3rd Quarter 1999 Monitoring Report.
11	N/A	55569	30-Sep-99	3rd Quarter 1999 Monitoring Report deficient.				
12	21761	55570	27-Jul-99	Engineering Feasibility Report Addendum inadequate.		21-Dec-99		21 December 1999 staff letter requiring Discharger determine extent of surface water and groundwater degradation, adequate Water Quality Protection Standards be proposed, an NOI be submitted for the Containment Zone Application, etc.

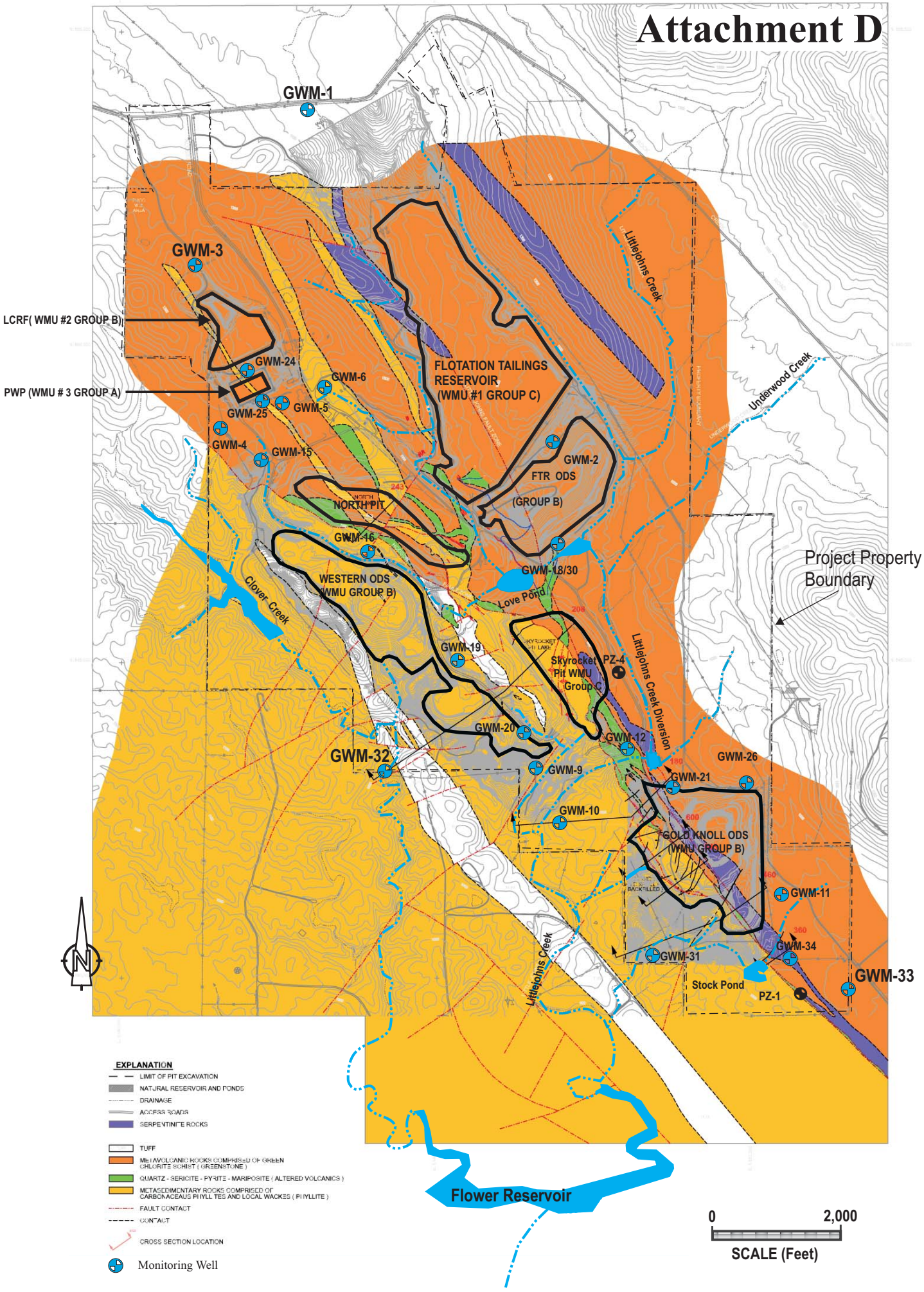
Royal Mountain King Mine, Calaveras County
Violation/Enforcement History

# Viol	Enf Id#	Viol seq#	Occur Date	Description	Enf order #	Eff date	Compl date	Description
13	21799	55644	24-Feb-00	Discharge of Gold Knoll seepage into Skyrocket Pit exceeds transfer standards for water into the Pit as specified in the WDRs.		10-May-00	16-Jun-00	NOV requires Discharger submit a proposed solution to cease the discharge of Gold Knoll seepage to Skyrocket Pit by 16 June 2000.
14	21904	56091	1-Mar-00	Supplement to Containment Zone Application incomplete: did not provide all info requested in our comments on the EFS Addendum.		18-May-00	19-Jun-00	18 May 2000 staff letter requesting addtional info be submitted by 19 June 2000.
15	22007	56225	31-Mar-00	1st quarter 2000 monitoring report deficient.		15-Jun-00	7-Jul-00	15 June 2000 staff enforcement letter requiring addendum to monitoring report by 7 July 2000.
16	22150	56627	6-Jul-00	Standard Observations and surface water monitoring in 1st quarter 2000 monitoring report not reported as required.		24-Jul-00	15-Oct-00	24 July 2000 staff letter requiring deficiencies in Standard Observations and surface water monitoring be corrected in future monitoring reports.
17	22198	56842	15-Jun-00	Discharger's response to NOV for illegal discharge of Gold Knoll ODS seepage to Skyrocket Pit did not propose to stop illegal discharge.		14-Aug-00	29-Sep-00	13267 letter requiring an interim solution report by 29 Sept. 2000 for management of Gold Knoll ODS seepage which includes ceasing the illegal discharge of Gold Knoll ODS seepage to Skryocket Pit. Discharge must cease by 12/1/00.
18	22239	56956	30-Jun-00	Discharge of sulfate at SWM-10 exceeds background and water quality goal for agriculture. Also some deficiencies in the 2nd quarter 2000 monitoring report.		11-Sep-00	10-Dec-00	9/11 NOV requiring amended ROWD by 12/10/00, EFS by 3/10/01, and addendum to 2nd quarter 2000 monitoring report by 10/2/00.
19	22415	57547	22-Nov-00	Interim Solution Report for Gold Knoll Seepage deficient since no monitoring proposed.		15-Dec-00	29-Dec-00	15 December 2000 staff letter requiring discharger submit proposed monitoring wells to be monitored monthly for water levels.
20			15-Mar-01	Board adopted Cease and Desist Order No. R5-01-0041	R5-01-0041	15-Mar-01		Discharger petitioned Cease and Desist Order to SWRCB.
21	22502	58118	31-Dec-00	Fourth Quarter 2000 Monitoring Report deficient.		28-Mar-01	18-Apr-01	28 March 2001 staff enforcement letter requiring an addendum to the fourth quarter 2000 monitoring report by 18 April 2001.
22	30103	78006	31-Dec-00	2000 Annual Monitoring Report deficient.		16-Aug-01	7-Sep-01	16 August 2001 letter requiring addendum to 2000 annual monitoring report.
23		78879	30-Dec-01	2000 Annual Monitoring Report deficient.				
24	30105	78883	30-Jun-01	2nd quarter 2001 monitoring report deficient.		16-Aug-01	7-Sep-01	16 August 2001 staff letter requiring addendum to monitoring report by 7 September 2001.

Royal Mountain King Mine, Calaveras County
Violation/Enforcement History

# Viol	Enf Id#	Viol seq#	Occur Date	Description	Enf order #	Eff date	Compl date	Description
25	33793	89128	15-Nov-01	Notice of Non-compliance with Cease and Desist Order No. 05-01-041 by letter dated 15 November 2001.	R5-2001-0041	15-Mar-01		Notice of non-compliance with tasks and due dates required in C&D Order No. 05-01-041.
26	34672	135079	24-Feb-03	Violation of WDRs Order No. 5-01-040, Prohibition A.2., Specification B.3. and B.12. by letter dated 24 February 2003.		24-Feb-03		Notice of Non-compliance letter of 24 February 2003. Regards non-containment of wastewater in Skyrocket Pit due to seepage to Littlejohns Creek. Compliance with WDRs are addressed in a revised Cease and Desist Order scheduled for the April 24-25, 3002 B
27			21-Mar-03	Violation of WDRs Order No. 5-01-040 & Title 27 for shutting FTR LCRS outlet valve. Discharge Specification B.2, Disch. Spec. B.3., Disch. Spec. B.9., and Provision E.8.		21-Mar-03		Notice of Non-Compliance letter of 21 March 2003. Discharger will be in violation of WDRs until the outlet valve is reopened to prevent the buildup of hydraulic head on the single-composite liner system.

Attachment D



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-____

REQUIRING MERIDIAN BEARTRACK COMPANY
MERIDIAN GOLD COMPANY
AND FELIX MINING COMPANY
ROYAL MOUNTAIN KING MINE FACILITY
CALAVERAS COUNTY
TO CEASE AND DESIST
FROM DISCHARGING CONTRARY TO REQUIREMENTS

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Board) finds:

1. On 15 March 2001, the Board adopted Closure Waste Discharge Requirements Order No. 5-01-040 prescribing requirements for the Meridian Beartrack Company, Meridian Gold Company, and Felix Mining Company (hereafter Discharger) Royal Mountain King Mine (RMKM) in Calaveras County. The Discharger operated the RMKM between 1989 and 1994.

2. Waste Discharge Requirements Order (WDRs) No. 5-01-040 provides, in part, the following:

*"**A. DISCHARGE PROHIBITIONS***

2. The discharge of waste to groundwater, surface water, or surface water drainage courses is prohibited except as specified by this Order.

4. The discharge of wastes into Skyrocket pit other than wastewater, which meets allowable transfer standards, is prohibited.

B. DISCHARGE SPECIFICATIONS

1. The treatment or disposal of waste shall not cause pollution or a nuisance as defined in the California Water Code, Section 13050.

2. The discharge of wastes shall not cause water quality degradation by allowing a statistically significant increase over background or baseline concentrations.

3. Waste materials shall be confined to the waste management units designated for that waste as shown on Attachment B except as specified by this Order.

9. WMUs shall be closed according to an approved closure and post-closure maintenance plan which implements §22510 of Title 27.

D. FINANCIAL ASSURANCES

1. The Discharger shall have financial assurance to ensure closure and post-closure maintenance of the three ODSs and LCRF as Group B mining waste and clean closure of the PWP, in compliance with Title 27 requirements.

2. The Discharger shall have financial assurance for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management units."

3. This facility's original waste discharge requirements (Waste Discharge Requirements Order No. 88-176) conditionally classified the overburden disposal sites (ODSs) as Group C mining waste based on several considerations including "(a) The material is non-acid-generating; (b) Arsenic is present in both ground and surface waters in the vicinity of the overburden sites, albeit in concentrations (0.01 to 0.03 ppm) which are less than the drinking water standard; (c) Waste discharge requirements will allow no statistically significant increase in background concentrations of arsenic or any other inorganic constituents due to the disposal of overburden or other mine activity; and (d) The Discharger will provide financial assurances for mitigation of any water quality impacts, including but not limited to covering the overburden piles with a clay cap and conducting any necessary ground or surface water remediation." All subsequent waste discharge requirements, including Waste Discharge Requirements Order No. 97-165, maintained this classification.

4. Data from March 1990 to present show seepage discharged from the West ODS to surface water has concentrations of manganese, nitrate, selenium, sulfate, and total dissolved solids (TDS) that exceed background concentrations. Surface water background data reflect the period between January 1987 and March 1990 as pre-RMKM mining. For clarity, actual mining began in 1989, but changes in water quality were not evident until later depending upon the location of monitoring points associated with the WMUs. Data from December 1989 to present show seepage from the West ODS has also caused impacts to groundwater with concentrations of arsenic, manganese, nitrate, selenium, ammonia, chloride, sulfate, pH and TDS above background concentrations based on intrawell statistical

analysis. Groundwater background data reflect the period between 1/87 and 3/90 as pre-RMKM mining.

5. Data from January 1992 to present show seepage discharged from the Gold Knoll ODS to surface water has concentrations of bicarbonate, sulfate, and TDS above background concentrations. Surface water background data reflect the period between January 1987 and December 1991 as pre-RMKM mining. Data from January 1990 to present show seepage from the Gold Knoll ODS has caused impacts to groundwater with concentrations of total cyanide, bicarbonate, chloride, arsenic, nitrate, selenium, sulfate, and TDS above background concentrations based on intrawell statistical analysis. Groundwater background data reflect the period between January 1987 and December 1990 as pre-RMKM mining based upon specific monitoring locations and the time it took for impacts to show up in the wells. Seepage discharged to the ground surface from the Gold Knoll ODS was transferred into Skyrocket Pit between 1998 and November 2000. This transfer violated the transfer standards for discharges to Skyrocket Pit as specified in WDRs Order No. 97-165. In December 2000 as an interim solution, the Discharger began recirculating this seepage to the top of Gold Knoll ODS for reinfiltration back through the ODS.

6. Data from December 1990 to present show seepage discharged from the Flotation Tailings Reservoir (FTR) ODS to surface water has concentrations of manganese, nitrate, selenium, sulfate, and TDS above background concentrations. Surface water background data reflect the period between January 1987 and December 1990 as pre-RMKM mining. Data from December 1990 to present show seepage from the FTR ODS has caused impacts to groundwater with concentrations of bicarbonate, manganese, chloride, nitrate, selenium, sulfate, and TDS above background concentrations based on intrawell statistical analysis. Groundwater background concentrations reflect data between January 1987 and November 1989 as pre-RMKM mining based upon specific monitoring locations and the time it took for impacts to show up in the wells.

7. Data from December 1990 to present show seepage from the FTR has caused impacts to groundwater with concentrations of bicarbonate, nitrate, chloride, sulfate, and TDS above background concentrations. Groundwater background concentrations reflect the period between January 1987 and November 1989 as pre-RMKM mining. The Discharger paid an Administrative Civil Liability (ACL Order No. 94-210) of $40,000 pursuant to the Porter-Cologne Water Quality Control Act (Clean Water Act) Section 13265 for transferring wastewater (i.e., cyanide) from the PWP (WMU#3) to the FTR (WMU#1) in violation of WDRs Order No. 91-195 and Clean Water Act Section 13264. The FTR's leachate collection and recovery system (LCRS) subsequently flooded; therefore, compromising the integrity of the

bottom liner system.

8. The discharges to groundwater and surface water from RMKM have impacted the downgradient Flowers Reservoir. At surface water sampling point SWM-3, at the outlet of the Reservoir, the summer time concentrations of sulfate, magnesium and arsenic have increased. For example, sulfate concentrations of 55-162 mg/l reported during 1987-88 increased to 270-290 mg/l in 2000-01.

9. The filling of Skyrocket Pit (SRP) has caused a change in groundwater gradient from inward towards the pit to outward from the southeast portion of the pit as a groundwater mound. This change in groundwater gradient direction occurred at the same time as increased flows and concentrations of sulfate and TDS, which exceed background concentrations, occurred in the Littlejohns Creek Diversion as seepage from SRP. Continued filling of Skyrocket Pit may result in overflow from the pit to surface water possibly within the next few years. On 19 April 2002, the Discharger submitted an Evaluation of the Skyrocket Pit Lake Level Fluctuation report. The projected annual peak lake level showed that an emergency action would be required in March 2004 to mitigate overflow of wastewater to Littlejohns Creek from Skyrocket Pit spillway.

10. Financial assurance for RMKM includes a Surety Bond for $3,302,000 of which $310,000 is for capping the ODSs. The $310,000 was determined when RMKM submitted the first financial assurance on 22 November 1988 and was based on capping the amount of low-grade ore and overburden mined as of 18 November 1988 to Group B mining waste standards. The current financial assurance is insufficient for capping the existing ODSs to Group B mining waste standards and has not been updated since first determined in 1988. The Discharger has estimated the cost to cap the three ODSs to Group B mining waste standards would between 22 and 30 million dollars.

11. On 14 November 1997, the Discharger submitted an *Engineering Feasibility Study* (EFS) to meet the requirements of Waste Discharge Requirements Order No. 97-165. The EFS evaluated several alternatives for corrective action. Corrective actions selected included providing surface drainage for the closed drainage basins adjacent to the FTR, West, and Gold Knoll ODSs, improving surface drainage and enhancing covers in selected flat areas on the surface of the West ODS and Gold Knoll ODS, and phased implementation of retention/evapotranspiration ponds in surface drainage channel downstream from the West and Gold Knoll ODSs. Other alternatives were rejected due to either ineffectiveness or high cost included removing the ODS material, covering the ODSs, and chemical and biological treatment of ODS material.

12. On 30 March 1998, staff sent the Discharger a Notice of Violation (NOV) for the discharge of Gold Knoll ODS seepage into Skyrocket Pit in violation of Discharge Prohibition A.6. of Waste Discharge Requirements Order No. 97-165. The NOV required the Discharger propose in the 1997 Annual Monitoring Report "… a method, or methods, to eliminate direct discharge of seepage from Gold Knoll pit, or any other wastewater, which exceeds the transfer standards, to Skyrocket Pit."

13. On the 15 April 1998, the 1997 Annual Monitoring Report was submitted. In that Report the Discharger proposed a management plan for Gold Knoll water that included improvements specified in the 1997 EFS to reduce seepage flow from the Gold Knoll ODS, operation of the land application system for the 1998 summer, a passive treatment system for improving seepage water quality, and permit modifications to allow for the interim transfer of Gold Knoll ODS seepage into Skyrocket Pit. Only the first of these four proposals for management of Gold Knoll water was implemented. The Discharger regraded the Gold Knoll ODS surface during the summer of 1998 to reduce seepage flow from the ODS.

14. A 7 July 1998 staff letter required the Discharger submit by 8 September 1998 a revised engineering feasibility study which would include Water Quality Protection Standards that comply with Title 27 requirements and evaluate the extent of contamination in surface water and groundwater. Staff also informed the Discharger of staff's plan to reclassify each of the three ODSs from Group C to Group B mining waste.

15. On 2 October 1998, the Discharger submitted a response to staff's plan to reclassify the three ODSs from Group C to Group B mining waste. The Discharger requested that staff withdraw the notice of reclassification "… until the EFS is complete and a logical corrective action program has been decided upon."

16. On 30 July 1999, the Discharger submitted an application for an NPDES permit to manage the impacts to surface water and an *Engineering Feasibility Study Addendum* (EFSA) that included an application for a Containment Zone to manage the impacts to groundwater at the facility. The Discharger proposed to discharge seepage from the West ODS and Gold Knoll ODS, leachate from the FTR LCRS, and future overflow from Skyrocket Pit to surface water under the NPDES permit. Approval of the Containment Zone was dependent upon approval of the NPDES permit since the Discharger proposed that impacted groundwater surfacing as seeps would be discharged to surface water under NPDES requirements.

17. A 21 December 1999 staff letter required the Discharger further evaluate the extent of impacts to surface water and groundwater, propose Water Quality Protection Standards for groundwater in accordance with Title 27, propose Water Quality Protection Standards for surface water if an NPDES permit was not issued, and

provide additional information to support the EFSA and for the Containment Zone application. Staff again informed the Discharger of its intent to reclassify the ODSs from Group C mining waste to Group B mining waste to ensure closure of these waste management units in accordance with Title 27 requirements.

18. The Discharger submitted responses to staff's 21 December 1999 letter in meetings on 17 January 2000 and 24 February 2000 and in a 23 March 2000 *Supplement to the Containment Zone Application.*

19. In a 27 April 2000 letter, staff requested the Discharger submit additional information to complete the NPDES permit application. Additional information requested included, but was not limited to, a description of proposed treatment units to be used to achieve water quality objectives for metals, nitrates, salinity, and toxicity. The Discharger has not yet submitted the requested additional information.

20. In a 10 May 2000 letter, staff issued an NOV for the illegal discharge of Gold Knoll ODS seepage into Skyrocket Pit. The NOV required the Discharger find an interim solution to cease this illegal discharge while the NPDES permit was being reviewed.

21. On 15 June 2000, the Discharger submitted a proposed interim solution for the discharge of Gold Knoll ODS seepage into Skyrocket Pit. The proposed interim solution consisted of raising the transfer standards for discharges into Skyrocket Pit to allow the continued discharge of Gold Knoll ODS seepage into Skyrocket Pit.

22. In a 15 August 2000 letter, staff denied the Discharger's request to raise the transfer standards for discharges into Skyrocket Pit since continued discharge of Gold Knoll ODS seepage to Skyrocket Pit would result in increased concentrations of constituents of concern in Skyrocket Pit and increased water level in the pit. The increased water level in the pit would impact surface water due to overflow of the pit by the end of 2002 and increase impacts to surface water and groundwater due to the increased reversal of groundwater flow direction in the pit. Staff also required the Discharger submit by 29 September 2000 an interim solution report for management of the Gold Knoll ODS seepage which would include ceasing the illegal discharge of Gold Knoll ODS seepage to Skyrocket Pit by 1 December 2000.

23. In a 14 September 2000 letter, staff denied the Containment Zone application because it did not address the recent impacts to surface water quality in the Littlejohns Creek Diversion caused by the rising water level in Skyrocket Pit.

24. At the request of the Discharger, a 23 October 2000 letter from staff discussed the problems at the RMKM and outlined possible solutions that would meet

requirements. The problems discussed included releases to groundwater and/or surface water from the three ODSs, the Flotation Tailings Reservoir (FTR), and Skyrocket Pit. The Discharger was requested to compare the long-term costs associated with each suggested alternative, evaluate the effectiveness of each alternative, and consider combining some of the suggested alternatives in the most cost effective way. This evaluation was to be the subject of a future meeting. The Discharger has not adequately responded to the request for long-term management alternatives with associated costs in compliance with Title 27.

25. On 27 October 2000, the Discharger submitted an Interim Solution Report for Management of Gold Knoll Seepage which proposed to recirculate Gold Knoll ODS to the surface of the Gold Knoll ODS as a short-term solution and proposed a long-term solution which would consist of reducing the amount of seepage from the Gold Knoll ODS by upgrading the Gold Knoll seepage collection pond surface water run-off diversion system, transferring the remaining seepage into Skyrocket Pit under revised transfer standards, discharging water from Skyrocket Pit to surface water during heavy run-off periods, and revising receiving water standards.

26. In a 16 November 2000 letter, staff approved the Discharger's proposed short-term solution to the illegal discharge of Gold Knoll ODS seepage into Skyrocket Pit in order to meet a 1 December 2000 deadline. The Discharger agreed to limit application (spray irrigation) of the seepage to the flatter portions of the Gold Knoll surface and to closely manage the discharge to ensure compliance with the WDRs. The Discharger was also requested to monitor and report the rate and volume of seepage applied to the Gold Knoll ODS surface and continuously monitor groundwater levels within and around the Gold Knoll ODS.

27. On 15 March 2001, the Regional Board adopted Cease and Desist Order (CDO) No. 5-01-041 to the Discharger for discharging contrary to Closure Waste Discharge Requirements (WDRs) Order No. 5-01-040, which was adopted on the same date.

28. The Discharger petitioned the CDO to the State Water Resources Control Board ("State Board" or "SWRCB"). The SWRCB issued a draft order in May 2002. The draft order would have vacated the CDO and remanded the matter to the Regional Board for further consideration of the impacts on background conditions at the site. The draft order concluded: "Petitioners are responsible for appropriate remediation of poor water quality conditions caused by their own actions and the mining activities of previous owners of the RMKM site, but are not responsible for remediation of background water quality conditions existing before action by Petitioners or prior owners of the RMKM site. The Regional Board order does not indicate that sufficient consideration was given to historic background (i.e., pre-disturbance) water quality conditions in the area of RMKM. … . [T]he matter should be remanded to the Regional Board to reevaluate background water quality

conditions considering the naturally elevated concentrations of inorganic constituents in the vicinity of the RMKM site. Following that evaluation, the Regional Board should review available regulatory approaches to closure requirements for RMKM and establish closure requirements based on consideration of background water quality conditions and the technologic and economic feasibility of measures to protect water quality. [footnote omitted] The Regional Board should adopt a reasonable compliance schedule for any necessary closure activities." As recommended in the draft order, the Regional Board has reevaluated background water quality conditions, considered data and analysis prepared by the Discharger and staff to date and reviewed available regulatory approaches to closure requirements. The Regional Board finds that RMKM's activities have significantly degraded surface and groundwater and that degradation is not primarily due to natural geologic formations. Potential regulatory approaches include reclassification of waste management units, engineered alternatives in compliance with Title 27 of the California Code of Regulations and a reissued Cease and Desist Order that includes a longer compliance schedule than Order No. 5-01-041. Reclassification of waste management units is not appropriate. The overburden disposal sites and Flotation Tailings Reservoir's Leachate Collection and Recovery System (FTR LCRS) liquid were properly classified as Group B because site data demonstrate that the mining activities are degrading groundwater and surface water quality. The Discharger has not proposed engineered alternatives that allow Regional Board consideration of more economically or technically feasible alternatives that comply with Title 27. The Regional Board has considered RMKM's comments and finds that the compliance schedule in this Order is reasonable.

29. In a 25 June 2001 letter, staff commented on the *Supplement to the Royal Mountain King Mine Closure Plan (February 2001).* The Supplement was submitted in response to staff comments on the November 1997 *Engineering Feasibility Study* and the July 1999 *Engineering Feasibility Study Addendum.* The Discharger proposed to address groundwater impacts with a Containment Zone and address surface water impacts by using Skyrocket Pit for storage and treatment of seepage, an NPDES permit for discharges from Skyrocket Pit and West ODS, and site-specific NPDES receiving water criteria considering pre-mining water quality. This included in-situ treatment of wastewater in Skyrocket Pit to remove nitrate, arsenic, nickel, selenium, and to some extent sulfate and total dissolved solids. Staff requested additional detailed information be provided in support of the above.

30. On 12 July 2001, the Discharger submitted a *Response to Comments on the Supplement to the Royal Mountain King Mine Closure Plan.* The Discharger described: 1) the pumping of ODS seepage wastewater to Skyrocket Pit, the treating of the pit lake water and then blend (dilute) this water with winter runoff in Littlejohns Creek, 2) the completion of an NPDES application including an Use

Attainability Analysis, 3) the costs to import clay to cap the Group B WMUs, 4) how upwelling of groundwater is occurring under the overburden disposal sites.

31. In a 27 July 2001 memorandum to SWRCB/OCC, the Regional Board's Executive Officer (EO) responded to the *Petition for Review and Request for Stay of Cease and Desist Order (CDO) No. 5-01-041* in response to SWRCB Order (File A-1369). The memorandum is included the Administrative Record. The issues included, among other things, 1) whether management, reclamation/closure of waste management units (WMUs), and clean up efforts were in full compliance with Waste Discharge Requirements, 2) whether impacts to surface and ground water quality impacting beneficial uses was insignificant and from naturally occurring poor quality background or from waste management units, and 3) the time schedule in the CDO was "technically infeasible."

32. On 29 August 2001 the Discharger submitted a *Final Closure/Corrective Action for the Royal Mountain King Mine* plan which describes the water quality concerns at the mine, the Discharger's approach to closure, the need for a groundwater Containment Zone (CZ) and NPDES permit. Additionally, it outlines an alternative engineered closure for the overburden disposal systems (ODSs) based on the CZ and NPDES permit, and a revised timeline for closure. The Discharger states that, "Groundwater quality throughout the mine site has changed; in part due to seepage infiltrating from the ODSs,…"

33. On 27 September 2001 staff received the *Technical Memorandum Proposed Plan and Schedule for Group B Closure of Overburden Disposal Sites* and *Technical Memorandum Proposed Plans for Compliance with Cease and Desist Order No. 5-01-041*. The documents reference material submitted in previous reports that were found inadequate by staff pursuant to minimum requirements in Title 27 and WDRs. The Discharger states that the increased TDS is in part due to seepage from the ODSs containing salts flushed from the mineralized overburden material, that the construction in accordance with prescriptive standards would be difficult to implement, would not be feasible and is cost prohibitive, and will not promote attainment of applicable performance standards.

34. In a 1 October 2001 letter staff sent a *Response to Comments on Supplement to the Closure Plan* which refutes interpretations and conclusions provided by the Discharger as described in Finding #28 above. The Discharger was requested to address staff comments by 9 November 2001. The Discharger submitted a letter on 7 November 2001 with an attached response to staff's letter.

35. On 25 October 2001, staff performed an inspection of the RMKM. Surface water was sampled from; 1) Littlejohns Creek Diversion, 2) seepage from Skyrocket Pit, 3) seepage from the West ODS, and 4) a sample downstream of the property line.

The Discharger was observed constructing collection sumps at seepage points at the West ODS#2 and West ODS#5 (surface water sampling locations). Collected sump wastewater is then spray irrigated on top of the West ODS for reinfiltration into the waste rock as a short-term solution by the Discharger. Subsequent laboratory results of surface water quality showed high total dissolved solids (696-3786 mg/L) and high sulfate (419-2270 mg/L) in surface water compared to background (231 mg/L total dissolved solids, 73 mg/L sulfate).

36. In a 15 November 2001 letter to the Discharger stating they were out of compliance with Cease and Desist Order No. 5-01-041. The letter reiterated the tasks required in the CDO.

37. In a letter dated 3 December 2001, the Board's Executive Officer detailed the major issues requiring the Discharger's elimination or containment of WMU seepages, prevention or reduction of groundwater impacts, and prevention of seepage migration from Skyrocket Pit. The letter included a staff technical memorandum titled *Discharge to Land Issues* and *NPDES Issues.*

38. On 4 December 2001 the Discharger disagreed with the violations noted in the Board's letter of 15 November 2001 and requested the Executive Officer approve the *Final Closure/Corrective Action* plan. By another letter on the same date, the Discharger addressed the compliance status of the CDO stating they continue to be responsive and want to resolve mine restoration and closure in a cost effective positive approach. A complete NPDES application was promised by 15 January 2002.

39. On 6 December 2001, staff inspected the facility and took surface water samples for laboratory analysis from Littlejohns Creek, ODS seeps, and Salt Valley Reservoir to the north in another watershed. Staff also took field measurements of pH, Electrical Conductivity (EC), temperature and photographs. The 4 January 2002 inspection report included a table of the results showing high EC (563-3620 µmohs/cm) in downgradient surface samples in comparison to upgradient samples of EC at 223-251 µmohs/cm. Salt Valley Reservoir had an EC of 148 µmohs/cm.

40. In a 4 January 2002 letter the Assistant Executive Officer asked the Discharger to reconsider its position on interim solutions and provide documentation that supports a final solution to mitigating the on-going pollution of surface water and groundwater.

41. On 9 January 2002, staff met with the Discharger to discuss Interim Mitigation Measures for mitigating discharges to surface and groundwater and the threat of Skyrocket overflowing its spillway.

42. On 8 February 2002 staff met with the Discharger to discuss interim actions based on technical standards, interim actions based on regulatory constraints, and long term actions to mitigating discharges to surface and groundwater and the threat of Skyrocket overflowing it's spillway.

43. In a 13 February 2002 letter staff provided comments on the *Third and Fourth Quarter 2001 Monitoring and Reporting Program Reports* stating that it was not appropriate for the Discharger to state water quality changes were consistent with the conceptual model in the *Engineering Feasibility Study* and *NPDES application,* which were both found incomplete. The reports showed statistically significant increases, using intrawell analysis, in 14 wells for constituents including total dissolved solids, ammonia, pH, arsenic, nitrate, sulfate, and selenium. The Discharger submitted an *Addendum* to the reports on 14 March 2002 stating that the statistically significant changes in water quality are the subject of ongoing development of corrective action and closure plans.

44. On 3 April 2002, the Discharger submitted a *Petition for Review and Request for Stay* to the SWRCB in connection with and matters addressed in the *Revised Monitoring and Reporting Program Order No. 5-01-040* and reconsideration of the same.

45. On 12 April 2002 the Discharger submitted the *2001 Annual Monitoring Report* stating, "Corrective action planning and activities associated with water quality changes described in these reports has been ongoing in coordination with Central Valley Regional Water Quality Control Board staff since 1997."

46. In a 7 May 2002 memorandum from the Executive Officer to SWRCB/OCC, Regional Board staff provided a lengthy technical and legal response to the SWRCB's draft order (File A-1369) in support of the Closure WDRs Order No. 5-01-040 and CDO 5-01-041 tasks. The memorandum states that staff and the Discharger are progressively moving forward with achieving compliance with the Closure WDRs, thus meeting the intent of the Tasks required in the CDO.

47. On 14 May 2002, staff received a fax from the Discharger, which included a *Summary and Cash Flow Schedule, Cost Estimate for Known Closure Elements* based on the 1996 Closure Plan and *Annual Site Management prior to closure (based on estimate for 2002)*. The elements included Construction and Engineering of the Leachate Concentrate Residue Facility and Process Water Pond waste management units in the amount of $3,527,000. This submittal was in response to the financial assurance requirement in CDO 5-01-041.

48. On 31 May 2002, the Discharger submitted a letter with *Work Tasks to be Performed to Evaluate the Nature of Water Quality* at the site in response to the

staff's letter of 8 March 2002. The Discharger proposed to continue to assimilate, evaluate, and compile the existing data to develop a comprehensive understanding of the pre- and post-RMKM mining surface water and groundwater quality and associated physical controls on that quality and movement, both natural and man-made.

49. On 1 July 2002, Board staff, including the Assistant Executive Officer and Board staff counsel, SWRCB staff and council, Discharger consultants and counsel met at the facility for a tour and meeting. The Discharger presented their conclusions on their understanding of the hydrogeologic conditions of the region and specifically those at the site. They Discharger provided its compiled data, but no written evaluation of the data. The Discharger concluded that, "Observed water quality changes at waste management units are a result of: 1) reduction in recharge area, 2) variability in annual rainfall, 3) artesian impacts, 4) groundwater disturbance during mining, and 5) possible infiltration and/or seepage."

50. In a 6 August 2002 letter from the Acting Assistant Executive Officer and technical memorandum staff responded to the Discharger's conclusions. The letter addressed the possibility that the Regional Board may reissue the CDO with additional findings and reconsider the time schedule given the amount of time lapsed since the CDO was issued. The memorandum disputed the Discharger's "observed water quality changes" conclusions. As noted in the technical memorandum, the remaining issues that should be addressed to protect the beneficial uses of waters of the State include:

- The discharges from the overburden disposal sites, as well as discharges from Skyrocket Pit Lake, should be controlled or eliminated in accordance with Title 27 and, where applicable, the Clean Water Act;
- Impacts to ground and surface water from mining waste management units are "measurably significant" in accordance with Title 27;
- Discharges to ground and surface water are above water quality protection standards, and
- The mass loading of salts discharging from the overburden disposal sites and Skyrocket Pit contribute to the salt load of a downstream 303(d)-listed impaired water body.

Furthermore, the imminent overflow of Skyrocket Pit continues to be a concern, and there are still significant issues that need to be resolved before the Discharger's NPDES application can be considered complete.

51. In a 24 September 2002 letter and technical memorandum a Technical Senior Engineering Geologist from the Region's Redding office, who has a great deal of experience in mine closures, completed an *independent* review of the some of the data, including all of the data the SWRCB staff cited in its Technical Report. The summary of the 24 September 2002 report states: "The hydrogeology and water chemistry at the RMKM site is quite complex. This makes it difficult to determine what is 'background' water quality and how much impact the waste management units have had on ground water quality. However, even taking this difficulty into account, based on the analysis done by the Regional Board staff, it is apparent the RMKM mine has impacted surface and ground water quality. Further, it is also apparent that containment structures required by Title 27 will help mitigate much of these impacts." "Containment structures" refers to capping the waste management units (e.g., overburden disposal piles) with very low permeable material as source control.

52. On 9 October 2002, staff and the Discharger met and presented their respective technical material. Data clearly show measurably significant impacts from the Discharger's mining activities from 1989 to present. The Discharger is also physically impacting the environment by allowing mass loading of dissolved constituents as year-round flow in once ephemeral (intermittent) creeks.

53. On 21 October 2002, the Discharger submitted an *Emergency Action Plan* for the Skyrocket Pit to prevent it from overflowing the spillway. The action plans consists of: 1) lowering the water elevation by pumping wastewater to North Pit, 2) requesting the Regional Board classify the North Pit as a Group C WMU, and 3) requesting a waiver from the Board to transfer water from Skyrocket Pit to North Pit. Staff's response to the *Emergency Action Plan* is discussed in Finding #55, below.

54. On 7 January 2003, the Discharger submitted a *Technical Analysis of Water Quality Changes at the Royal Mountain King Mine*. The report concluded that: 1) total dissolved solids and other constituents of concern are naturally occurring, is variable, and due to the effects of site geologic conditions, 2) water quality impacts are from construction of the waste management units by alteration of pre-existing recharge patterns, and 4) poor quality water has been observed in the form of salt springs. Staff's response to this *Technical Analysis* is discussed in Finding #58, below.

55. In a 24 February 2003 letter and attached technical memorandum, staff provided comment on the *Emergency Action Plan* for Skyrocket Pit wastewater management as discussed in Finding #53, above. Staff concluded that transferring wastewater from Skyrocket Pit to North Pit, which is *not* a waste management unit (WMU), would create additional seepage and/or overtopping issues and that the intrinsic

properties of North Pit (i.e., the waste is readily containable) would not qualify as a Group C WMU. Furthermore, staff denied the Discharger's request to recommend revision of the WDRs by classifying the North Pit as a Group C WMU in order to accept wastewater from SRP because this action would reduce the water quality in North Pit. The transfer of wastewater from Skyrocket Pit to North Pit would create another groundwater mound. Water in the North Pit flows towards Skyrocket Pit, which would increase the lake level, making it harder to manage, and increasing the likelihood of Skyrocket Pit overflowing in the near future. Wastewater in the North Pit would also impact groundwater through fracture flow. The letter also concluded that the Discharger was in violation of WDRs, Prohibition A.2. and Specification B.3. by allowing wastewater from Skyrocket Pit to discharge to surface water and groundwater, as well as Specification B.12 by continuing to discharge the FTR LCRS wastewater to SRP due to the lack of containment of the wastewater in the SRP Group C WMU.

56. On 13 February 2003, staff received two documents titled *Amendment to Closure and Postclosure Maintenance Plan for the Leachate Concentrate Residue Facility (LCRF) Closure* and *Closure Plan Amendment, Flotation Tailing Reservoir (FTR), Skyrocket Pit (SRP), and Overburden Disposal Sites (ODSs).* The LCRF closure plan outlines the engineered alternative evaluation for capping the Group B WMU, closure schedule, closure and postclosure maintenance program, and closure and postclosure maintenance cost estimates. The closure plan amendment for the FTR, SRP and ODSs outlines the Discharger's request to revise Closure WDRs to reclassify FTR Group B wastewater to Group C, and plans to cease the transfer of FTR LCRS wastewater to SRP, and allow the hydraulic head to build up in the FTR after plugging the system. Proposed closure of the SRP lake includes allowing the pit lake to reach natural equilibrium over time, and the creation of wetlands downgradient from the ODSs by planting salt tolerant vegetation.

57. On 4 March 2003, the Discharger submitted a letter stating they had closed the outlet valve at the FTR LCRS on 1 March 2003. In a letter dated 21 March 2003, staff informed the Discharger that they were out of compliance with WDRs and Title 27 for shutting off the outlet valve to the FTR LCRS without an approved closure plan.

58. On 13 March 2003, the Discharger submitted a letter concluding that the observed water quality changes at the RMK monitoring points represent background water quality, and are not changes caused by discharges of mining waste from the WMUs. Therefore, the Discharger sees no remaining ground for completing the NPDES application and the Regional Board should consider it withdrawn.

59. In a letter dated 25 March 2003, staff provided an approved Revised Monitoring and Reporting Program (MRP) Order No. 5-01-040, signed by the Executive

Officer on 5 March 2003. The Revised MRP resolves all issues in SWRCB/OCC Petition No. A-1469.

60. In a letter dated 28 March 2003, staff provided comments on the *Closure Plan Amendment, Flotation Tailing Reservoir (FTR), Skyrocket Pit (SRP), and Overburden Disposal Sites (ODSs)* stating that the closure elements do not comply with WDRs Order No. 5-01-040 or Title 27; therefore, the document is considered incomplete. The Closure Plan does not comply with WDRs or Title 27 in that; 1) the water quality currently being transferred from the FTR to Skyrocket Pit as Group B wastewater does not qualify as Group C because of the concentrations of the constituents of concern in the wastewater, and 2) plugging the LCRS system of the FTR would allow a hydraulic head to build up in the FTR tailings and flood the already compromised clay liner system (see Finding #7) allowing continued leakage to groundwater. Furthermore, the SRP lake has been filled above its equilibrium level (groundwater mounding) by the Discharger's transfer of Group B wastewater from other WMUs resulting in seepage to Littlejohns Creek. The Discharger's calculations show the SRP lake may overflow in the year 2004. The Discharger proposes to create wetlands by planting salt tolerant vegetation at the seepage points associated with the ODSs instead of capping the source of the problem in accordance with Title 27. Only 30% of the ODSs have what the Discharger calls an impermeable cover. Some of the high TDS seepage from the ODSs is captured and spray irrigated back on top of the WMUs to infiltrate and seep out the bottom at even higher concentrations. A wetland environment would not capture the increased flow once irrigation ceased and would not assimilate the mass loading of high concentrations of dissolved minerals and metals emanating from millions of tons of waste rock into once-intermittent creek environments. Therefore, creating wetlands downgradient from ODS point source discharges (seepage) would not comply with WDRs or Title 27, nor would the discharge comply with the Federal Clean Water Act (i.e., NPDES).

61. In a 1 April 2003 letter and attached memorandum, staff provided comments on the *Technical Analysis of Water Quality Changes at the Royal Mountain King Mine* report. Board staff's more recent analytical review of the data provides additional scientific evidence, by fingerprinting water quality characteristics from the geologic formations and from groundwater and surface water sampled from downgradient monitoring points, clearly showing measurably significant impacts from RMKM mining activities (~1989 to present). Intrawell statistical analysis based on pre-RMKM mining (~1987-1991) should continue to be applied as reported in RMKM's monitoring and reporting program where results show measurably significant water quality changes since RMKM started mining.

62. Order No. 5-01-040 required the Discharger to cease discharge of wastewater to Skyrocket Pit from the FTR LCRS by September 30, 2001 unless the Discharger

had previously submitted a work plan by June 30, 2001, that demonstrated Skyrocket Pit can be managed to prevent it from impacting surface water. Order No. 5-01-040 also required the Discharger to submit a proposal to cease discharge of leachate from the ODSs to surface and ground by September 30, 2001. Both of these tasks were based on work plans that the Discharger was required to submit by June 30, 2001. The State Board's draft order concluded that the three-month period between the submittal of the work plans and the completion of the tasks was inadequate given the nature and complexity of the site. The Regional Board has considered the nature and complexity of the site, the additional analysis and data developed since the State Board issued the draft order, the likelihood of Skyrocket Pit overtopping, the Discharger's need to complete engineering designs, comply with applicable permitting requirements, contract for work to be done, and complete the work needed to implement an approved plan. As suggested in the draft order,

the Regional Board has provided significant additional time to complete these tasks, as ordered below.

63. As requested by the Discharger, the Regional Board has considered whether Order No. 5-01-040 properly classified the following WMUs: the ODSs and FTR liquid (currently classified as Group B). These existing classifications are appropriate because these WMUs consist of or contain nonhazardous soluble pollutants of concentrations that exceed water quality objectives for, or could cause, degradation of waters of the state.

64. The Discharger is in violation of Waste Discharge Requirements Order No. 5-01-040 for closing the FTR LCRS outlet valve without an approved closure plan.

65. The Discharger is in violation of Waste Discharge Requirements Order No. 5-01-040 for continued discharge of seepage from the ODSs and Skyrocket Pit to surface water and groundwater.

66. The Discharger is in violation of Waste Discharge Requirements Order No. 5-01-040 for the continued discharge of seepage from the ODSs and Skyrocket Pit to groundwater and surface water, which threatens to cause "pollution" or a "nuisance" as defined in the California Water Code, Section 13050.

67. The Discharger is in violation of Waste Discharge Requirements Order No. 5-01-040 for failing to provide financial assurances to ensure closure and post-closure maintenance of the three ODSs as Group B mining waste in accordance with Title 27 requirements.

68. The Discharger is in violation of Waste Discharge Requirements Order No. 5-01-040 for failing to provide financial assurances for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management units in compliance with Title 27 requirements.

69. Section 13301 of the California Water Code states, in part, that:

"When a regional board finds that a discharge of waste is taking place or threatening to take place in violation of requirements or discharge prohibitions prescribed by the regional board or state board, the board may issue an order to cease and desist and direct that those persons not complying with the requirements or discharge prohibitions (a) comply forthwith, (b) comply in accordance with a time schedule set by the board, or (c) in the event of a threatened violation, take appropriate remedial or preventive action."

70. On __ April 2003, in Sacramento, California, after due notice to the Discharger and all other affected persons, the Board conducted a public hearing at which evidence was received to consider a Cease and Desist Order to establish a time schedule to achieve compliance with waste discharge requirements.

71. Issuance of this Order is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), in accordance with Section 15321 (a)(2), Title 14, California Code of Regulations.

72. Any person affected by this action of the Regional Board may petition the State Water Resources Control Board to review the action in accordance with Sections 2050 through 2068, Title 23, California Code of Regulations. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P.O. Box 100, Sacramento, California 95812, within 30 days of the date of issuance of this Order. Copies of the laws and regulations applicable to the filing of a petition are available on the Internet at http://www.swrcb.ca.gov/water_laws/index.html and will be provided on request.

IT IS HEREBY ORDERED THAT, Cease and Desist Order No. 5-01-041 is rescinded, and pursuant to Section 13301 of the California Water Code, the Discharger shall:

Comply with waste discharge requirements through compliance with the following time schedule:

	Task	Due Date
a.	Submit a work plan with a proposal to cease: 1) discharges to surface water caused by Skyrocket Pit and how the pit lake will be managed to prevent discharges,	**1 September 2003**

Task	Due Date
and 2) discharges of leachate from the ODSs to surface water and groundwater. Any proposed discharges of wastewater to surface water must comply with the Federal Clean Water Act (i.e., NPDES).	
b. Submit a work plan with a proposal to prevent the buildup of hydraulic head on the FTR liner system and how the Group B wastewater will be managed to prevent discharges.	**1 September 2004**
c. Cease dischargers of leachate from the ODSs to surface water.	**1 September 2004**
d. Cease discharges to surface water caused by Skyrocket Pit.	**1 September 2004**
e. Submit a detailed closure and postclosure maintenance plan and phased closure schedule of the three ODSs in compliance with Title 27 requirements for Group B mine waste. The plans shall include detailed cost estimates. The plan shall include a demonstration of assurances of financial responsibility to ensure closure and postclosure maintenance of each waste management unit in accordance with its approved closure and postclosure maintenance plans.	**1 July 2004**
f. Submit plans with detailed cost estimates and a demonstration of assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases from the waste management units.	**1 July 2004**
g. Complete closure of the three ODSs according to the above approved plans and begin postclosure maintenance.	**1 October 2006**

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, then the Executive Officer may apply to the Attorney General for judicial enforcement or issue a complaint for Administrative Civil Liability.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on _____.

_____
THOMAS R. PINKOS, Executive Officer

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